MARINE REVIEW.

VOL. IX. CLEVELAND, O., AND CHICAGO, ILL., JAN. 18, 1894. No. 3.

LAKE CARRIERS' ASSOCIATION.

DETAILS OF THE THIRD ANNUAL MEETING IN DETROIT—A GATHERING FULLY REPRESENTATIVE OF THE VESSEL INTERESTS OF THE LAKES—NEW OFFICERS ELECTED AND IMPORTANT QUESTIONS CONSIDERED.

DETROIT, Mich., Jan. 18.—Three years ago a great waterways convention was held in this city, and the magnitude of the various shipping interests brought together at that time was a surprise to the whole country. No such meeting of representative men engaged in inland commerce had ever been held in the United States. As a result of the influence exerted by that gathering, a 20-foot waterway will soon be a reality throughout the lakes. Another convention, which is exceeded in importance only by the big meeting referred to, was opened here Wednesday. The third annual meeting of the Lrke Carriers' Association was more of a success in point of attendance and interest in the subjects discussed than any of its projectors had anticipated. Early Wednesday morning the corridors of the Cadillac hotel were crowded with vessel owners and vessel managers from all parts of the lakes. When President Thomas Wilson of Cleveland called the members of the association together in the assembly room of the hotel, it was evident that the meeting would prove very interesting. Among leading owners and representatives noticed in the hall were the following:

Cleveland: Capt. Thos. Wilson, M. A. Bradley, Capt. W. S. Mack, J. C. Gilchrist, Albert J. Gilchrist, Chas. P. Gilchrist, Capt. John Palmer, Capt. J. T. Hutchinson, Capt. John W. Moore, J. H. Sheadle, Capt. George P. McKay, Harvey D. Goulder, Capt. John Mitchell. Capt. Al. Mitchell, B. L. Pennington, W. C. Richardson, John Corrigan, H. A. Hawgood, W. A. Hawgood, Mart. Mullen.

Detroit: Capt. J. W. Millen, A. A. Parker, Wm. Livingstone, Jr., W. A. Livingstone, E. C. Waldo, Capt. E. M. Peck, Waldo A. Avery, Capt. Richard Cusen, Capt. J. M. Jones, Gen. O. M. Poe, U. S. A., D. C. Whitney, J, W. Westcott, Cash P. Taylor, E. T. Peck, Timothy Hurley, Capt. W. H. Campau, Capt. M. W. Humphrey, Robt. T. Graves, Capt. Mart. Swain, David Carter, B. W. Parker, James Candler, Eber Ward, Charles Whitaker, Henry Wineman, Capt. Albert Stewart.

JAMES CORRIGAN, PRESIDENT OF THE LAKE CARRIERS' ASSOCIATION.

Buffalo: J. J. H. Brown, Ed. Smith, C. H. Keep, John Rice, James McKenzie, Capt. John Green.

Chicago: J. S. Dunham, J. J. Rardon, J. H. Channon, John G. Keith, J. L. Higgie, Calvin Carr, Homer J. Carr, D. T. Helm, Charles Kremer, B. A. Miller, W. W. Bates, C. H. Harris, C. A. McDonald, W. R. Owen.

Bay City and West Bay City: F. W. Wheeler, Capt. James Davidson, John Shaw, O. W. Blodgett.

Port Huron: Alvin Neal, J. J. Lynn, Capt. Alex. Sinclair, Henry McMorran, John McArthur, Ed. Kendall.

Toledo: John Craig, G. G. Hadley, W. S. Brainard, L. S. Sullivan.

Among representatives from less important ports were: David Vance of Milwaukee, James McBrier of Erie, Frank Owen

[*Continued on page 8.*]

1893 and the Past Thirty-Eight Years.

EVIEW, Cleveland, Ohio.

NAME OF MINE.	Prior to 1878	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	TOTALS.
Menominee Range.																		
Appleton																4,377	5,618	9,995
Aragon													1,745	46,609	96,829	167,948	127,901	441,032
Armenia													50,275	26,649				76,924
Beta										1,585	1,226				1,400			4,211
Brier Hill						10,593	4,388											14,981
Calumet						5,847	29,239	3,627										38,713
Chapin				34,556	134 521	247,506	265,830	290,972	157,455	198,871	336,128	290,871	518,990	742,843	488,749	660,052	489,134	4,856,478
Claire																57,352	9,612	66,964
Columbia (H)																	22,426	22,426
Commonwealth				9,643	97,410	115,862	21,493	34,622	42,947	51,189	56,609	61,818	108,515	116,786	134,982	249,113	151,291	1,252,280
Cornell										4,566	2,064							6,630
Crystal Falls						1,341								3,974				5,315
Curry (G)			12,803	21,851	17,534	13,374	3,676	10,079	4,897			5,376	28,722	72,162	100,681	125,773		416,928
Cyclops (G)		6,028	46 158	14,368	12,644	18,287	22 675	24,099	49,987	37,189	14,297	14,693	6,101	7,351	10,599	1,697		286,183
Delphic							3,410	508	9,880	17,648	2.272							33,718
Dunn											24.677	118,096	151,828	156,963	162,721	133,666	58,590	806,541
Fairbank						8,045	455											8,500
Florence				14,143	100,501	160,155	40,232			8,210	79,399	142,585	196,269	218,570	48,806	48,246	9,634	1,066,750
Great Western						587	22,825	20,710		22,267	23,239	21,860	38,454	72,546	62,464	87,487	661	373,100
Groveland															1,049			1,049
Half and Half													5,961	1,496	67			7,524
Hamilton Ore Co										872	600	8,801	8,347	17,072	58,197	2,183		96,072
Hemlock															35,531	65,459	11,323	112,313
Hersel														955				955
Hiawatha																	1,683	1,683
Hollister														2,020	1,057	1,021		4,098
Hope																15,543	2,275	17,818
Indiana						4,280	4,362	636	2,739	5,854								17,871
Iron River						29,115	100,369	52,584	55,693	78.591	83,018	110,000	179,238	155,458	59,345	1,176		904,587
Keel Ridge				11,496	19,511	23,425	5,033									5,997	3,298	68,760
Lee Peck (D)																2,844		2,844
Lincoln															1,813	26,019	8,757	36,589
Loretto																	8,131	8,131
Ludington				8,816	3,374	52,152	102,632	101,165	124,194	74,454	101,653	61,883	116,297	97,355	141,303	15,777	109	1,001,164
Manganate														6,844				6,844
Mansfield														18,303	49,836	69,259	69,558	206,956
Mastodon						3,477	18,577	18,187	11,737	41,640	48,792	51,463	63,511	66,526	45,370	9,150	23,485	401,915
Metropolitan						23,854	36,643	27,577		6,393	9,070	3,490						107,027
Michigan Explo.Co.																	505	505
Millie (Hewitt)					4,352	9,500	7,516	7,927	4.627	5,517	1,163	11,124	12,274	39,232	5,889	6,780		115,901
Monitor (Lamont)													12,348	31,139	26,226	42,819	13,777	126,309
Nanaimo						2,480	29,221	37,620		5,400	30,460	5,744		3,441	13,200			127,566
Northwestern							7,202	10,004										17,206
Norway (G)		7,276	73.519	198,165	137,077	165,547	114,836	71,710	67,741	93,878	95,726	87,260	68,044	61,717	4,089	44,767		1,291,352
Paint River						6,515	5,971	11,652	2,373	13 933	10,240	12,506	32,700	62,654	45,435	18,390		222,371
Penn Iron M'n'gCo.																	280,450	280,450
Perkins			13,465	49,196	60,406	73,648	76,514	38,120	19,020	12,852	10,834	16,684	12,354	11,971				394,064
Perry							3,138											3,138
Pewabic														26,991	64,507	115,273	165,745	372,516
Quinnesec		25,925	41,954	52,436	43,711	44,240	21,676	16,995	14,110	13,442	6,585	2,249						283,323
Selden										790	1,302							2,092
Sh'l'n & Shaf'r(U'n)						15,948	4,334	6,774		14.282	2.377	10,936	11,385	60,133	70,770	57,682		254,621
Sheridan													1,102	595	7,137	45,745	2,234	56,813
South Mastodon												2,722	4,005	1,476				8,203
Stephenson			798	23,089	10,856					1,018	3,589							39,350
Sturgeon River											6,829	7,800	4,775					19,404
Vulcan (G)	4,593	38,799	56,975	86 976	85.274	94,012	79,874	101,722	124,125	143,930	205,036	129,541	153,900	104,996	78,967	179,904		1,668,654
Walpole											1,740	900	9,614	2,940	3,895			19,089
Youngstown						6,198	15,292	8,344		25,635	34.418	12 699		44,460	3.705			150,751
Total	4,593	78,028	245,672	524,735	727,171	1136,018	1047,415	895,634	690,435	880,006	1193,343	1191,101	1796,755	2282,237	1824,619	2261,499	1466,197	18,245,547
Gogebic Range.																		
Anvil											10,075	24,676	47,000	45,690	73	42,090		169,604
Ashland									6,741	74,015	175,563	174,183	257,915	435,949	267,439	231,896	66,067	1,689,768
Atlantic											1,369							1,369
Aurora									5,422	94.553	159,252	179,937	199,865	246 695	83,554	319,482	179,028	1,467,788
Bessemer										4,788	16,101							20,889
Blue Jacket											1.799							1,799
Brotherton										8,880	21,721	40,639	53 267	80,486	46,574	130,833	18,905	401,305
Cary													56,542	116,203	121,186	106,484	28,578	428,993
Colby (E)								1,022	84,302	257,432	258,518	285,880	136,833	193,038	38,034	304,241	194,464	1,753.764
Comet														2,882	10,144	54,779	9,604	77,409
Davis														1,497		21,754	15,210	38,461
Eureka														23,794	13,907	10,655	31,385	79,741
Father Hennepin												28,721	76,545	63,903	15,759			184,928
Federal														21,150	6,778			27,928
First National											1,997							1,997
Germania									5,468	19,734	61,714	53,918	103,169	52,000	22,383	4,283	7,964	330,633
Imperial																8,515		8,515
Iron Belt												30,000	51,551	110,368	1,506	161,635	23,976	379,036
Iron Chief										9,950	2,249							12,199
Iron Chief No. 2										551								551
Ironton										18,424	24,762		8,635	6,247	300			58,368
Jack Pot																3,944	1,651	5,595
Kakagon										18,497	52,179	1,228						71,904
Montreal										17,240	24,378	20,631	42,724	16,704	56,133	58,728	34,378	270,916
Newport										20,184	75,660	69,145	36,987	71,488	105,606	165,962	109,718	654,750
Nimikon										4,105	23,217	1,313						28,635
Norrie									15,419	124,844	237,254	412,196	674,394	906,728	758,572	985,216	472,062	4,586,685
Odanah (F)										13,714	30,475	5,412	13,354	1,065		6,711	3,956	74,687
Pabst									1,103	17,979	19,906	49,976	116,376	172,060	130,226	113,245	104,510	725,381
Palms											1,414	9,725	35,245	50,604	32,227	102,382	2,658	234,255
Pence												26,687	574					27,261
Ruby (Puritan)										16,388	45,000	3,058	9,472	11,694	913			86,525
Section 33													73,370	126,963	38,576	14,681		253,590
Sparta																2,912		2,912
Sunday Lake									1,405	10,963	18,137			6,010	64,902	56,046	22,876	180,339
Superior										2,690	27,763			36,675	10,710	14,277		92,115
Trimble										10,780	12,764	2,387						25,931
Tyler's Forks														10,683				10,683
Valley										1,878								1,878
Windsor													14,576	37,210	97	53,242	2,474	107,599
Total								1,022	119,860	747,589	1303,267	1419,712	2008,391	2847.786	1825,599	2973,993	1329,464	14,576,686
GRAND TOTAL	10,426,842	1111,110	1375,691	1908,745	2307,005	2965,412	2352,840	2508,693	2516,642	3559,371	4742,276	5046,503	7292,644	9003,701	7057,078	9074,243	6058,955	79,297,822

ades Tilden. F—1891 shipments included in Cary. G—1893 shipments given under Penn Iron Mining Co. H—Formerly Shafer.

Lake Superior Iron Ore Production for

Supplement to MARINE R

January 18th, 1894.]

NAME OF MINE.	Prior to 1878	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	TOTALS.
Marquette Range.																		
American (Sterl'g)				797	4,702	8,006	3,618	2,916			1,483	13,699	20,032	21,000	21,604	15,076		112,9
Ames																	1,103	1,1
Barnum (B)	385,211	26,680	24,015	24,522	27,883	41,778	62,752	69,408	47,458	52,975	16,123	10,211	12,835					801,8
Bay State	8,583		3,336	2,268	583	1,236	631											16,9
Bessie															847			8
Beaufort						5,532	18,976	18,360	17 166	17,354	12,829							90,2
Blue																	6,969	6,9
Boston				6,478	14,824	18,245	20,190	2,218										61,9
Buffalo (A)										10,860	24,686	30,801	50,919	100,464				217,7
Buffalo Mining Co.															479,509	379,719	106,864	966,0
Braastad { Mitch'l	25,898	4,259	11,131	13,279	21,146	33,396				7,017	16,519	4,091						136,7
Braastad { Wint'p	117,088	23,740	26,595	45,247	43,630	23,005	50,143	73.144	53,913	58,743	74,067	86.789	155,341					831,4
Cambria	19,022	3,754	6,724	6,958	19,246	64 545	47,508	59,742	50,706	58,784	41,130	57,861	72,780	80,359	34,662	41,549	30,445	666,8
Champion	550,588	73,464	94,027	112,401	145,427	159,009	104,960	210,180	173,915	137,593	146,330	174,680	215 098	223,442	133,413	109,979	61,648	2,826,1
Cheshire (Swanzey)	31,619	16,924	17,985	13,202	15,011	31,498	13,730	3,557		8,328	2,842				7,301	29,403	19,096	210,4
Chicago			949	2,415	5,531		117											9,0
Cleveland	1,679,738	152,737	131,167	212,748	198,569	206,120	218,219	225,674	268,757	203,664	207,441	184,316	274,048	331,713	221,788	310,907	218,105	5,245,7
Cliffs Shaft (B)											87,346	78,520	134,616	188,776				489,2
Columbia (Klom'n)	64,212			6,663	11,158	12,066	714											94,8
Curry													16,671					16,6
Detroit						5,402	12,314	3,809	19,125	39,400	26,099	18,500	10 112	6,080				140,8
Dexter							4,878	16,202	750			1,821	3,895	9,136	5,448	13,000	7,833	62,9
Dey								2,709										2,7
East Champion	41,209	5,401	4,029	10,217	3,408	4,002	5,039						2,697					76,0
East New York												13,694	29,739	36,413	50,293	35,175	911	166,2
Edison													893					8
Erie						2,731	5,405											8,1
Etna							1,091											1,0
Fitch														16,550	15,093			31,6
Foster (B)	100,012		4,804	1,122	3,011	11,648	10,029	9,675	9,643					21,949				171,8
Gibson									1,515	12,142	2,700							16,3
Goodrich	6,841	7,547	3,992	11,131	10,245	9,998												49,7
G'd Rapids (Davis)											1,200	11,611	20,058	26,426	9,362	22,823	352	91,2
Hartford													566			5,678	6,513	12,7
Hortense														16,246				16,2
Humboldt	402,344	33,920	18,204	14,726	26,302	43,463	31,866	23,763	11,766	20,207	19,873	11,655	15,866	23,259	19,879	4,571		721,6
Iron Cliffs															278,270	289,395	130,812	698,4
Imperial														38,460	18,552	7,194		64,2
Iron Mountain											333							3
Jackson	1,769,263	83,121	103,219	120,620	118,939	96,830	71,278	83,251	68,657	89,370	109,606	101,909	128,891	124 682	92,979	92,567	51,009	3,306,1
Lake Superior	1,946,515	109,674	173,938	204,094	262,235	296,509	200,799	204,796	226,040	267,622	302,909	240,225	288,781	318,321	30 .831	366,715	329,610	6,047,6
Lillie	16,072	8,506	22,380	18,347	16,748	27,494	4,614	2,683	708	3,957	23,041	32,692	33 916	31,812	19,551	29,005	68,861	360,2
Lucy (McComber)	133,946	30,180	28,962	31,206	28,051	40,406	14,676				12,139	22,276	32,982	43,483	27,683	26,326	21,964	494,2
Manganese							397	1,484	3,111	1,367								6,3
Marquette (C)										5,229	20,441	7,060	70,128	23,692	16,802	9,555		152,9
Michigamme	217,617	58,622	56,970	52,766	57,272	43,712	42,533	25,935	12,373	48,790	58,726	36,458	56,909	80,777	23,169	1,894	935	875,5
Milwaukee			941	13.142	31,635	40,891	805	25,991	38,465	46,693	50.470	48,908	52,727	24,763				375,4
National		4,191	33,310	29,351	24,833	23,366	21,178	13,987										150,2
Negaunee											5,259	45,304	78,318	76,488	64,218	85,846	69 732	425,3
" Con Wks						1,177	10,394	43		1,094								12,7
New York (York)	786,984	21,903	57,528	58,512	50,074	56,806	1,517	1,677			5,128		12,844	2,422		11,220	25,000	1,091,6
N. Y. Hematite	26,134	4,547	2,609	2,192		2,105												37,5
North Champion											886	5,685	7,757					14,2
North Republic												289						2
Northwest																1,687		1,6
Norwood											2,200	3,553						5,7
Nonpareil (St. Law)						9,998	11,961				1,436							23,3
Pascoe						18,880		12,605	18,249	10,072								59,8
Pendill		4,000	12,549	3,959	13,586	9,987	318	1,594										45,9
Phenix (Dalliba)					10,986	44,836	1,687				1,605							59,1
Pioneer										5,140	1,203	9,066						15,4
Pitts. & L. Angel'e.	439,227	28,161	25,321	14,928	18 060	14,326	27,259	86,922	111,051	131,731	191,120	223,600	229,070	261,681	241,605	287,517	351,973	2,683,5
Platt																2,676	5,448	8,1
Prince of Wales (A)														32,415				32,4
Quartz													491					4
Queen (A)												5,527	66,122	109,217				180,8
Republic	646,774	176,221	135,231	235,387	233,786	235.109	152,565	277,757	250,835	241,161	220,624	235,062	287,390	220,065	191,127	167,991	64,195	3,971,2
Repub. Reduc. Co.											87	21,050	22,122	3,915				47,1
Richards											1,374							1,3
Riverside												5,622	3,712		6,783		43	16,1
Rolling Mill	164,162	30,773	10,039	15,172	1,668	163	1,528	1,820	3,437	4,403	1,058	402						234,6
Saginaw	257,429	54,097	43,396	35,059	30,793	16,276	9,108	946							4,320			451,4
Salisbury (B)	81,248	52,155	39,293	21,457	43,6:0	42,243	17,028	26,629	29,503	51,667	48,304	74,947	72,449	85,798				686,4
Sam Mitchell										8,823	8,411	546						17,7
Samson (Argyle)	207,701	10,351	5,455		4,584	12,421	15,700	1,334		1,133		4,512	2,796	1,218		600		267,8
Section 12			5,027	330	13,243	3,287												21,8
South Buffalo (A)											4,964	24,706	69,359	146,383				245,4
Spurr	139,172	2,225	1,409		2,746	8,873	9,067			752								164,2
Taylor				1,110	10,559	15,146	6,155											32,9
Titan						1,778	13,128	19,411	23,340	13,865	16,003	2,846						90,3
Volunteer (P. & L. A)	154,410	5,929	24,633	38,881	39,276	41,456	19,414	11,748	5,679	24,034	47,486	56,321	60,156	141,524	92,699	127,130	69,561	950,3
Webster						4,443		934		6,229	2,054		448					14,1
West Republic					7,354	27,865	30,734	19,623	12,700	10,558	12,872	9,861	1,510					133,0
Wetmore						1,777	2.777	4,585	5,887	10,756	3,335	2,074	19,679					50,8
Wheat (Prout)	3,230		851	3,323	9,040	9,554	6,625	6,824	9,200	15,867	17,538	4,987	7,997	15,141	4,412			114,3
Wheeling								4,098	6,383		74							10,5
Winthrop														109,576	122,042	191,658	180,071	603,3
Total	10,422,249	1033,082	1130,019	1384,010	1579,834	1829,394	1305,425	1548,034	1480,422	1627,380	1851,414	1923,737	2642,813	2993,664	2512,242	2666,856	1829,053	39,749,6
Vermilion Range.																		
Chandler												54,612	306,220	336,002	373,969	651,655	435 930	2,158,2
Minnesota Iron Co.								62,124	225,484	304,396	394,252	457,341	535,318	532,000	517,570	498,353	370,303	3,897,3
Pioneer													3,144	12,012	3,079	2,651		20,8
Zenith																14,991	14,388	29,3
Total								62,124	225,484	304,396	394,252	511,953	844,682	880,014	894,618	1167,650	820,621	6,106,7
Mesabi Range.																		
Biwabik																	151,500	151,5
Canton																	24.416	24,4
Cincinnati																	26,372	26,3
Commodore																	65,137	65,1
Duluth																	37,626	37,6
Franklin																	46,617	46,6
Hale																	3,616	3,6
Lowmore																	1,645	1,6
Mesabi Mountain																	123,015	123,0
Minnewas																	13,858	13,8
Mountain Iron																4,245	119,818	124,0
Total																4,245	613,620	617,8
Miscellaneous								1,879	441									2,3

A—Now Buffalo Mining Co. B—Now Iron Cliffs. C—1893 shipments included in Winthrop. D—Cherry Valley Ore.

E—Blue

Lake Superior Iron Ore Production.

This issue of the REVIEW contains a supplement showing iron ore shipments from all Lake Superior mines during the calendar year 1893 and for the past thirty-eight years. In order to cover shipments of a large number of mines that moved ore through Marquette, it was necessary to consult the mining companies and sales agents, as the officials of the Duluth, South Shore & Atlantic Railway Company refused to do more than give figures showing the total lake movement. The REVIEW is under obligations, then, to the ore dealers who contributed this information, as well as the several dock managers who furnished statements.

As will be seen by the tables, the entire output of the Lake Superior region in 1893 is 6,058,955 tons, as against 9,074,243 tons in 1892. One important feature of the statistics is the great falling off in all-rail shipments, which amounted to only 170,144 tons in 1893, against 528,930 tons in 1892. While the shipments from Escanaba were practically cut in two, Marquette made a gain of 68,489 tons over 1892. This was due mainly to the low rate of lake freight that ruled from Marquette during the greater part of last season. The supplement gives the shipments by mines and the tables that follow give details regarding the output by ranges and ports:

IRON ORE SHIPMENTS BY RANGES, LAKE AND RAIL, SHOWING ENTIRE OUTPUT OF LAKE SUPERIOR REGION, CALENDAR YEARS 1892 AND 1893.

RANGES.	1893.	1892.
Marquette	1,829,053 tons*	2,666,856 tons*
Menominee	1,466,197 "	2,261,499 "
Gogebic	1,329,464 "	2,973,993 "
Vermillion	820,621 "	1,167,650 "
Missabe	613,620 "	4,245 "
Total	6,058,955 tons.	9,074,243 tons.

IRON ORE SHIPMENTS BY PORTS FROM LAKE SUPERIOR MINES, 1892 AND 1893.

PORTS.	1893.	1892.
Marquette	1,094,827 tons*	1,026,338 tons*
Escanaba	2,048,981 "	4,010,085 "
Ashland	1,117,524 "	2,223,683 "
Gladstone	203,585 "	115,886 "
Two Harbors	903,329 "	1,165,076 "
Superior	80,273 "	4,245 "
Duluth	440,292 "	.....
All rail	170,144 "	528,930 "
Total,	6,058,955 tons.	9,074,243 tons.

*Tons are in all cases gross tons of 2,240 pounds; weights are railroad weights.

Against a Removal of the Tariff on Iron Ore.

If the democratic majority in congress carries out its policy of putting iron ore with a few other leading commodities on the free list, it will not be on account of any lack of interest in the tariff question on the part of vessel owners in Cleveland. Within the past week the committee of Cleveland owners entrusted with the work of preparing a protest against the removal of the ore tariff has had printed one of the most forcible documents that has as yet appeared on the subject. The pamphlet gives evidence of very careful preparation, and is valuable mainly on account of the fair way in which the subject is treated, irrespective of political feelings. The statistics which it contains show that the author is thoroughly posted on lake business. In addition to publishing this protest, the vessel owners have also sent a representative to Washington to present their views specially to congressmen and senators from lake states.

The Cleveland lodge of the Shipmasters' Association, having a membership of 168 captains in charge of lake vessels, have also united in a protest that has been forwarded to Washington by the officers of the lodge.

Boiler and Steam Pipe Covering.

There are numerous instances on the lakes where engineers have figured out an actual saving of 100 to 150 tons of fuel in a season through having boilers and steam pipes well covered with the best material. A vessel master citing another advantage to be derived from this source, says that when he struck the St. Mary's river last season by night and had to bank fires, he found none of the usual delay in getting up steam preparatory to moving on in the morning. The covering was the cause of retaining steam, so that all that was necessary was to pull the bell rope when the vessel was ready to move. With reference to the economy and cost of non-conducting materials, it may be said that the material which is in the greatest degree non-conducting, incombustible and durable, will prove the most economical, even though its first cost be greater than that of an inferior article. Experiments with naked pipes show that a 2-inch pipe, carrying steam at 60 pounds pressure, will condense 180 grammes per foot per hour. Covered with a good covering like magnesium carbonate, the condensation will be but 38 grammes per foot per hour, a saving of 142 grammes per foot per hour, which is equivalent to 3.13 pounds of steam per day of ten hours for each foot of pipe covered. The covering of 100 feet of pipe then, will save in a year of 300 ten-hour days, the coal necessary to convert 93,900 pounds of water into steam. One pound of bituminous coal is capable of making about 8.5 pounds of steam, so the saving of coal due to the 100 feet of covering would be 5½ tons per year, which, at $4 per ton, amounts to $22. The real saving will probably amount to more than this estimate in most cases; and it may be said in round terms, that the 100 feet of covering causes each year a saving of its own first cost ($25). Inasmuch as the material pays for itself in a year, and will last indefinitely under ordinary conditions, its advantageousness is beyond question.

Penokee and Gogebic Consolidated.

The announcement from Milwaukee of the appointment of receivers for the Penokee and Gogebic Consolidated mines was not a surprise to people in the iron ore business. In the REVIEW of July 6 last, Vol. VII, No. 1, a detailed statement of the financial condition of this corporation was published, and it was evident at that time that a continuation of the conditions then surrounding the iron business, and which have since proved immeasurably worse, would result in a failure. The reported sale of the ore which the company has at the mines to Oglebay, Norton & Co. of Cleveland, very probably comes from some transaction whereby the Clevelend firm of sales agents is protecting itself against loss through advances made on the ore.

Society of Naval Architects.

In a letter to the REVIEW, Secretary Capps of the Society of Naval Architects and Marine Engineers says: "I hoped to have the published proceedings of our recent meeting in New York ready for issue before the end of this month, but an unfortunate fire has completely destroyed the printing establishment of the publishers to whom I had entrusted the order, and we will now be fortunate if we can issue the volume by the end of February. The society itself will not be subjected to any loss on account of the fire, except the delay consequent upon re-setting the type and proof reading, all of which was well under way at the time of the fire.

William H. Wiley, well known engineer and member of the scientific publishing firm of John Wiley & Sons, New York, contributes to the January issue of Cassier's Magazine, which is a very fine number, an account of the first general meeting recently held in New York, of the Society of Naval Architects and Marine Engineers.

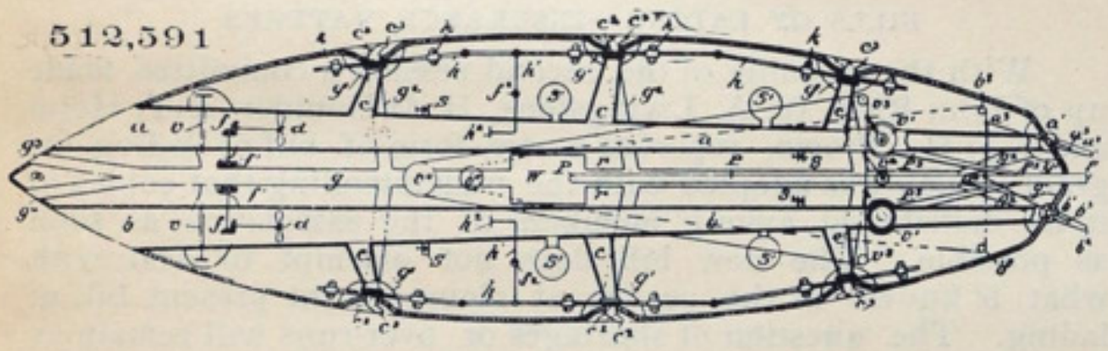
Illustrated Patent Record.

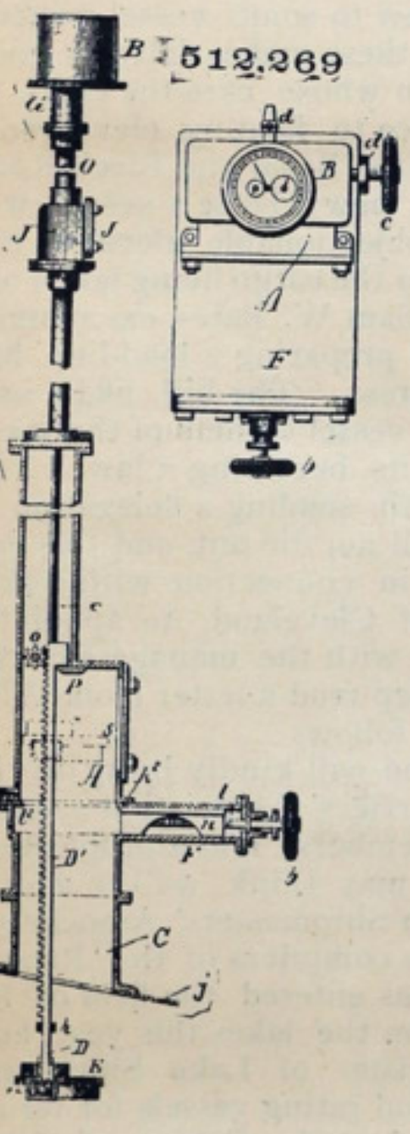
512,269. SHIP'S LOG. Francis A. Bishop, San Francisco, Cal. Filed June 26, 1891. Serial No. 397,626. (No model.)

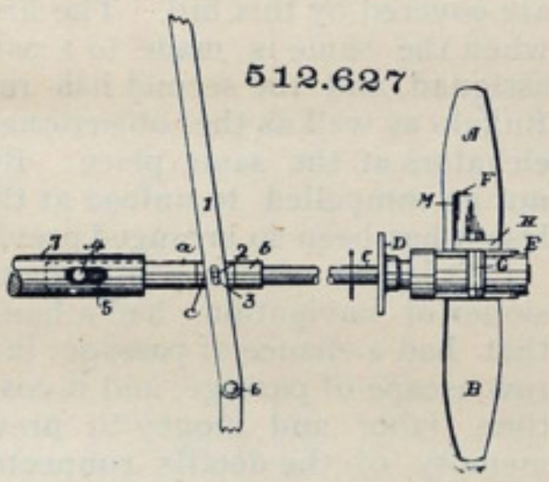
Claim: First, the combination with a case and a ship's log capable of being raised and lowered therein, of a gate for shutting off the water below the log when the latter is raised and knives connected with the gate and case for severing sea weed or other material between them. Second, the combination with a casing, and a ship's log constructed to be raised and lowered in the casing, of a gate located in position to form a temporary bottom in the casing, and a discharge cock or opening above the gate for discharging water confined above the gate when the latter is closed.

512,591. HYDRAULIC PROPULSION OF VESSELS. James C. Walker, Waco, Texas. Filed Mar. 29, 1893. Serial No. 468,164. (No model.)

Claim: First, the combination of a vessel having longitudinal pipes with propeller wheels in them, a well or bilge water collector, and a discharge pipe dipping down into the bottom of said well and extending rearward, and having an ejector connection with the discharge ends of the propeller pipes. Second, the combination with a vessel having longitudinal pipes with propellers in them, of a well for holding bilge water, a ventilating pipe leading therefrom to the stern, and ejector branches leading from the main or propeller pipes into the discharge end of the air pipes to create a suction or draft therein substantially as shown and described. Third, the combination with a vessel having longitudinal pipes with propellers in them, of a well for holding bilge water, a pipe leading therefrom to the bow of the boat and opening above the water







line, a second pipe leading from said well to the stern of the boat, and branch pipes from the propeller pipes leading into the discharge end of said rear pipe.

512,627. PROPELLER WHEEL. Clark Sintz, Grand Rapids, Mich. Filed Mar. 2, 1893. Serial No. 464,425. (No model.)

Claim: First, the combination of a rotary shaft, a hub F′ mounted on said shaft, the supports F projecting from said hub, the longitudinally slotted case or shell E surrounding the shaft and hub and provided with lugs G, the propeller blades A B pivotally mounted on the supports F and provided with slotted lugs H, bolts J pivotally connecting the lugs G and H, and actuating mechanism for shifting the position of the blades upon their pivotal supports. Second, the combination of a propeller shaft, a hub mounted upon said shaft, a longitudinally slotted shell or casing mounted on the propeller shaft and surrounding said hub, a pair of propeller blades having direct pivotal connection with said shell or casing, blade supports projecting from the hub through the slots of the shell or casing and pivotally connected with said blades, and means for shifting the pivotal connections of the blades to change the position of the blades.

Iron and Steel Vessels Built on the Lakes.

In the REVIEW of Dec. 28 last there was published a statement of iron and steel vessels built in the United States during the past seven years. Through a misunderstanding in communicating with the commissioner of navigation the table was headed "Iron and Steel Vessels Built on the Lakes During the Past Seven Years." To our readers who are well posted on statistics of this kind, the error was plain, but it is to be hoped that others who are not as well informed have not been misguided. We now print another table showing iron and steel vessels built on the lakes during the past seven years. This data is also taken from the books of the United States commissioner of navigation:

IRON AND STEEL VESSELS BUILT ON THE LAKES DURING THE PAST SEVEN YEARS

Year ending June 30.	Sail vessels and barges		Steam vessels.		Total.	
	No.	*Tonnage.	No.	*Tonnage.	No.	*Tonnage.
1893	9	11,722.14	26	51,102.08	35	62,825.22
1892	5	5,281.57	18	23,177.23	23	28,458.80
1891	4	4,979.02	31	53,009.49	35	57,988.51
1890	4	4,575.28	19	33,626.56	23	38,601.84
1889	...	.....	14	29,414.91	14	29,414.91
1888	1	428.30	10	19,590.01	11	20,018.31
1887	...	.....	3	6,077.99	3	6,077.99
	23	27,387.31	121	215,998.27	144	243,385.58

*Tonnage is registered gross tons.

The Canadian Canal.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Jan. 18.—The contractors of the Sault Ste. Marie canal, (Canadian) report that all the masonry in the lock chamber is complete. The massive walls 1,000 feet in length, 60 feet high and 30 feet thick at the base tapering to half that width at the top, make a public work of which Canada may well be proud. The governmental papers say that Col. O. M. Poe, the chief of the staff of the United States military engineers on the new canal which the United States government is building at Sault Ste. Marie, went over the Canadian work and pronounced the masonry as fine a piece of construction as there is on the continent. When he went over the work at the beginning of last summer, he was of the opinion that it would take some five years to finish the canal. On his last visit he could not sufficiently express his surprise upon finding all the masonry in the lock finished. In view of the success of the work and the great importance the structure will be to Canadian commerce, it is expected that a fitting ceremony will mark the opening of the canal. The contractors are required to have the crib work along each side of the entrances complete in May next. The power house is already half built and the steel conduit pipe, through which the water will pass to the power house, is already on the ground. The water before entering the power house is divided and will be used to operate two large turbines which will work dynamos. The power for the illumination of the lock and its approaches by electric light, as well as for the working of the gates will thus be supplied.

Drop in the Grain Rate—Elegant Paintings.

Special Correspondence to the MARINE REVIEW.

CHICAGO, Ill., Jan. 18.—As an indication of what is to be expected the coming season, if the vessel men at Detroit do not succeed in uniting upon some plan for regulating freights, it may be mentioned that rates for winter storage and freight to Buffalo next spring have suddenly dropped until they are now 2½ cents for wheat. At this ratio, corn will be taken at 1 cent by April 15, if all the boats now here are to be placed in commission by the opening of navigation. It is said that fully half the boats owned in Chicago are on the market this winter, but no sales of importance have so far been reported.

G. A. Coffin, staff artist on the Tribune, has painted a magnificent water-color of the steamship Manitou for the Chicago Ship Building Company. Manager W. I. Babcock says it is the finest picture of a lake boat he has ever seen. Mr. Coffin is now engaged on another water-color of the Manitou for the Lake Superior line. He is one of the few artists on newspapers around the lakes who has made a study of marine drawings. Ever since being on the Tribune, he has made a specialty of that paper's marine work. He is so enthusiastic over the work that he went clear to Michigan City last month to the wreck of the steamer F. W. Wheeler, in order to see just how a boat looked when on the beach.

The season of balls and other social gatherings among the captains and engineers has begun. We are in receipt of an invitation from the Detroit lodge, No. 7, of the Shipmasters' Association to attend a ball on Wednesday evening, Jan. 24, at Strassburg's Academy. Association No. 19, M. E. B. A. of Milwaukee also send us an invitation to attend its seventh annual ball on the evening of Friday, the 26th inst.

[*Continued from first page.*]

of Ogdensburg, Mark Hopkins and Henry Fish of St. Clair, Engineer E. S. Wheeler of Sault Ste. Marie, Gurdon Corning and Capt. John A. Edgar of Saginaw, M. M. Mills Marysville, and Mr. Tomlinson of Duluth.

In opening the meeting President Wilson thanked the members for assistance during the past year and added a few remarks appropriate to the retirement, which was, of course, a conclusion on account of the rule that does not admit of a re-election in the office of president. Reading of the reports of Secretary C. H. Keep and Treasurer Geo. P. McKay then followed. These are summarized at the conclusion of this article. The secretary's report is largely made up of detail regarding important legislative aims gained in Washington. The treasurer's report, in brief, showed that the association had paid off a small debt carried over from 1892, and had practically met expenses for 1893 with the balance of receipts.

ELECTION OF OFFICERS.

With the announcement that the election of officers was in order, Capt. James Millen of Detroit nominated James Corrigan for the office of president. Mr. Corrigan, who is an extensive individual vessel owner, is also a member of the firm of Corrigan, Ives & Co., of Cleveland, owners of iron mines and sales agents for a number of large mining companies in the Lake Superior district. His election to the presidency of the association has been expected for some time past. He was a leading figure in the several efforts that resulted in the consolidation of the old Lake Carriers' Association and the Cleveland Vessel Owners' Association, and has since taken a very active part in the management of the new body. That the honor accorded him was well deserved was shown by the unanimity of feeling regarding his fitness for the place. No other nominations were made. Complimentary remarks in the way of seconds to the nomination were heard from Chicago, Detroit, Buffalo and Toledo members, and then Mr. Corrigan was elected by a unanimous, rising vote. A telegram from Cleveland announced that he would not be present until Thursday and Capt. Wilson continued to occupy the chair.

The election of other officers followed rapidly. A committee, consisting of W. C. Richardson, A. A. Parker, Edward Smith, J. S. Dunham and Alvin Neal, was appointed to nominate ten vice presidents. They reported promptly, and the entire list of managers and committees was made up without any differences among members.

LIST OF OFFICERS FOR 1894.

The full list of officers elected by the general association, to serve for the ensuing year, is printed herewith:

President—James Corrigan of Cleveland.

Secretary—Charles H. Keep of Buffalo.

Treasurer—George P. McKay of Cleveland.

Counsel—Harvey D. Goulder of Cleveland.

Vice Presidents—E. M. Peck, Detroit; Washington Bullard, Buffalo; J. S. Dunham, Chicago; C. A. Eddy, Bay City; G. G. Hadley, Toledo; H. A. Hawgood, Cleveland; James McBrier, Erie; David Vance, Milwaukee; F. J. Firth, Philadelphia.

Board of Managers—S. D. Caldwell, P. P. Miller, E. T. Evans, James Ash, W. Bullard, J. J. H. Brown, John Gordon, M. M. Drake, John Rice, W. P. Henry, Edward Smith and Jas. McKenzie of Buffalo; Thomas Wilson, M. A. Bradley, James Corrigan, H. M. Hanna, George P. McKay, H. G. Dalton, Harvey H. Brown, J. W. Moore, B. L. Pennington, H. A. Hawgood, W. C. Richardson, Hon. W. J. White, W. D. Rees, John Mitchell, R. R. Rhodes and Caleb E. Gowan of Cleveland; W. Livingstone, Jr., James Millen, D. Carter, E. M. Peck, D. C. Whitney, H. S. Hodge and A. A. Parker of Detroit; J. L. Higgie, Jesse Spaulding, J. S. Dunham, John Keith, W. R. Owen, C. W. Elphicke and W. M. Egan of Chicago; W. S. Brainard, George G. Hadley, L. S. Sullivan and A. W. Colton of Toledo; James Davidson, C. A. Eddy, O. W. Blodgett and F. W. Wheeler of Bay City; Alex. McDougall of Duluth; David Vance, R. P, Fitzgerald, J. C, Ricketson, Conrad Starke of Milwaukee; J. C. Gilchrist of Vermillion, F. W. Gilchrist of Alpena, Alvin Neal of Port Huron, C. T. Morley of Marine City, W. E. Chapman of Sandusky, F. J. Firth of Philadelphia, and Frank Owen of Ogdensburg.

Committee on Finance—Messrs. H. M. Hanna, H. H. Brown, James Corrigan, Henry A. Hawgood, Thos. Wilson, M. A. Bradley, J. C. Gilchrist, E. M. Peck, D. C. Whitney, W. P. Henry, J. H. H. Brown, David Vance, R. P. Fitzgerald, John Keith and J. S. Dunham.

Committee on Aids to Navigation—Messrs. D. Carter, H. S. Hodge, Geo. P. McKay, H. G. Dalton, B. L. Pennington, W. C. Richardson, Thos. Wilson, John W. Moore, W. M. Egan, Frank Owen, A. W. Colton, James Davidson, Alvin Neal, E. T. Evans and Washington Bullard.

Committee on Legislation—Messrs. S. D. Caldwell, James Ash, E. T. Evans, P. P. Miller, John Gordon, Washington Bullard, H. M. Hanna, James Corrigan. W. Livingstone, Jr., James W. Millen, Jesse Spaulding C. A. Eddy, Alex. McDougall, W. S. Brainard, F. J. Firth.

Mr. F. J. Firth of Philadelphia, whose name appears among the vice presidents, is not a resident of a lake city, but in view of active services rendered the association since its organization, the constitution was ameuded so as to admit of his election.

Gen. O. M. Poe and E. S. Wheeler, superintendent of the St. Mary's Falls canal, were both in attendance at the first session. Gen. Poe congratulated the organization upon its growth, but on account of his official position could not, of course, enter into any discussion with the vessel owners regarding matters in his charge. Mr. Wheeler was desirous of having vessel owners respond more generally to the letters of inquiry sent out from his office each winter, regarding the cost of transporting freight carried through the canal. He was promised assistance from the finance committee.

BILLS OF LADING—INSURANCE MATTERS.

With the opening of the second session a committee, made up of John Rice, W. A. Livingstone, H. D. Goulder, D. T. Helm and J. J. H. Brown, reported a new form of bill of lading for grain, which was adopted with the understanding that copies of it be distributed among members of the association as soon as possible. The new bill does not attempt to deal with what is known as the cut-throat clause of the present bill of lading. The question of shortages or over-runs will remain as in the past, but two other points, new to some vessel owners, are covered by this bill. The first of these makes delivery good when the same is made to a party in whose care the cargo is assigned, and the second has reference to floating elevators at Buffalo as well as the objectionable Erie Basin and Black Rock elevators at the same place. By the new clause a vessel will not be compelled to unload at these objectionable elevators unless it has been so arranged previous to the cargo being taken on.

It is now several years since William W. Bates, ex-commissioner of navigation, had a hand in preparing a load-line bill that had a chance of passage in congress. The bill had a narrow escape of passage, and it cost the vessel owners of the lakes time, labor and money to prevent its becoming a law. The memory of the details connected with sending a delegation to Washington to defeat this measure will not die out, and this fact was most forcibly shown here when in connection with a proposition from Capt. Wm. S. Mack of Cleveland, to appoint a committee of vessel owners to confer with the managers of the Inland Lloyds Register, Secretary Keep read a letter from Wm. W. Bates and George F. Williams, as follows:

"The undersigned desire that you will kindly bring to the notice of the meeting of the Lake Carriers' Association a statement that may be of interest to its members, and a proposition on our part, which, possibly they may think well to adopt. The statement is this: The American Shipmasters' Association of New York, for twenty-six years the compilers of the 'Record of American and Foreign Shipping,' has entered the field of inspection and classification of vessels on the lakes this year, and are now making surveys for a 'Register of Lake Shipping.' Standard rules for building, classing and rating vessels for terms of years have been formulated and adopted. Copies of these have been sent to the president and to different members of your association. Any advice in relation to the perfecting of rules, or any suggestions otherwise, that will promote the good of owners and underwriters will receive due attention, our wish being to gain and sustain the best possible relations to these great interests. Our proposition is that the Lake Carriers' Association appoint a representative to confer with us on valuations, both for wood and metal vessels. Hard and fast rules for insurance valuations can not be made, except from year to year and their application must needs have always considerable freedom."

Motions to postpone action on this communication indefinitely, to lay it on the table for one year, and to otherwise get rid of it, fell thick and fast after its introduction. Of course no discourtesy was intended for the classification society. William W. Bates' name was connected with it, and that was enough for some members of the Lake Carriers' Association who had been through the load line scare. After some very severe criticism,

all directed against Mr. Bates, had been indulged in, the communication was received and filed, and then a committee, consisting of Wm. S. Mack, A. A. Parker, John Rice, H. A. Hawgood, J. C. Gilchrist, W. S. Brainard, Edward Smith, John T. Hutchinson and W. M. Egan, was appointed to confer with the managers of the Inland Lloyds on the classification of vessels for the coming year. At this point the association went into executive session, to consider the all important subject of devising some plan for maintaining fair rates of freight for next season.

A settlement of the question of tonnage dues for the new year did not occupy as much time as it was expected it would. There was a general disposition to cut down the dues, partly on account of a reduction of expenses, due to the government taking charge of several of the private lights, and also on account of the depressed conditions surrounding business. After a short discussion it was decided to make the dues 3 cents a ton this year, against 4 cents last year. Barring extraordinary expenses this tax per ton will probably carry the association through the year.

HANDLING CHARGES ON ORE, GRAIN AND LUMBER.

Capt. Wilson introduced the new president, Mr. James Corrigan, at the opening of the first session Thursday, Mr. Corrigan was very favorably received and Capt. Wilson was accorded a standing vote of thanks for his services in behalf of the association. It had been expected that the several plans for regulating freights would be taken up at this session, but upon the introduction of a resolution by Mr. B. L. Pennington, the association took up the question of charges for unloading ore from vessels, and this was followed by the appointment of committees with a view to bringing about retrenchment all along the line of cargo handling charges. The Cleveland members all felt sure of a reduction in the unloading charge on ore, which is now 16 cents at Ohio ports and 18 cents at Buffalo. There was a difference of opinion on the question of asking that the charge be reduced uniformly to 12 cents, and it was decided to specify no rate but to give full authority to the committee to seek the aid of ore producers who are not connected with the dock companies and get the best terms possible. The most interesting feature of this session of the convention occurred when Capt. James Davidson of West Bay City, who is largely interested in the grain elevator business of Buffalo, was asked to give his views as to the ability of the elevator owners to reduce charges to vessels for handling grain and still make a profit on their investment. The charge is $4 per thousand to steamers and $4.50 per thousand to sail vessels. Capt. Davidson admitted that stock in the elevator pool paid excellent dividends. He had become interested in it as far as he could go, and had of late increased his holdings, but he was on the side of the vessel, as his vessel interests predominated. His only defense of the high charges rested in the cla m that the shovelers' union at Buffalo was a power in maintaining an exorbitant labor cost. Henry McMorran of Port Huron elicited hearty applause by meeting Capt. Davidson in argument on the subject, and declaring from his practical knowledge of the elevator business at Port Huron that $2.50 a thousand would be a fair charge to place against vessels at Buffalo, and that at the present rates Buffalo elevators are making 300 to 400 per cent. He went into details regarding the first cost and maintenance of steam shovels, and as a result both he and Capt. Davidson were put on the committee that will seek a reduction. Trimming charges on ore, dry dock charges, and charges for handling lumber were also talked of at length, but the discussion was m inly of the kind that has been referred to in these columns on various occasions in the past. It was also held by several members that harbor towing rates, especially in Buffalo, should be reduced. Committees were appointed on these various aims as follows:

Grain handling charges at Buffalo, Erie and Fairport.—M. M. Drake, James McKenzie and James Ash of Buffalo; Henry McMorran of Port Huron.

Dry dock charges.—W. A. Avery, Detroit; P. P. Miller, Buffalo; John W. Moore, Cleveland; Alvin Neal, Port Huron; J. L. Higgie, Chicago.

Charges for unloading ore.—B. L. Pennington, H. A. Hawgood, M. A. Bradley, Cleveland; Edward Smith and John Rice, Buff lo; W. R. Owen, Chicago.

Cost of fuel and weights of bituminous coal.—G. G. Hadley, Toledo; P. P. Miller and John Rice, Buffalo; John Palmer, Cleveland; James McBrier, Erie.

Ore trimming charges.—W. D. Rees, William Mack, J. C. Gilchrist, Alex. McDougall, Thomas Wilson.

VARIOUS MATTERS INVOLVING WORK OF COMMITTEES.

Wm. Livingstone, Jr., and Capt. Geo. P. McKay spoke of the advantages that would result from an increase in the width of Lime-Kilns crossing. The association agreed upon a resolution proposing that the crossing be widened from 440 feet to 600 feet, and the legislative committee was instructed to immediately take such action as will result in a clause for this purpose being introduced into the next river and harbor bill. On account of the present condition of the cut, the additional width can be obtained at a cost of $200,000 to $250,000, which is very low in proportion to the original cost of this improvement. The legislative committee was also instructed to give special attention to appropriations for the proposed breakwater at Ashtabula harbor, Lake Erie, and the committee on aids to navigation will, in accordance with the desire of the association, urge the establishment at an early date of lights at Grand Marais harbor, Michigan.

As a result of the new features embodied in the grain bill of lading, it was decided to also introduce a clause into bills of lading for coal that would prevent vessels being sent to obscure docks in narrow and crowded places where delays and annoyances are encountered. To this end a committee, of which Mr. J. C. Gilchrist was chairman, reported the following clause to be inserted in such bills: "Cargo deliverable by vessel only at dock with good facilities and accessible for vessels loaded to the fair draft carried in and out of port of delivery."

The matter of incorporating the association was left in the hands of the finance committee, with instructions to bring about an incorporation at an early date, if serious legal difficulties are not encountered.

INFORMAL ADDRESSES—MISCELLANEOUS SUBJECTS.

In the course of both morning and afternoon sessions on Thursday, Superintendent Wheeler of St. Mary's Falls canal addressed the vessel owners. He read first a carefully prepared paper entitled "Relations of Our Great Inland Waterway to the Proposed Nicaragua Canal," which was very much appreciated. His second subject had reference to the probable influence of the Chicago drainage canal on lake levels. He thought that canal would hardly lower the level of Lakes Michigan and Huron 3 inches, as had been claimed. The effect would be material, however, and in order to show that it would be of importance Mr. Wheeler had estimated that $150,000 would be required to make up in dredging a loss due to lowering the level of these lakes 3 inches. This estimate is based upon what is known of costs connected with the 20-foot channel work. Mr. F. W. Wheeler, ship builder of West Bay City, also spoke at the afternoon session, Thursday, about the tariff and other subjects pending in Washington.

The insurance committee, which was appointed during one of the early sessions to confer with lake underwriters relative to the publication of an Inland Lloyds Register for 1894, was the last of the committees to make a report before adjournment. They had met Mr. Wm. W. Bates, who is in charge of the proposed new Lake Register of Shipping, and had concluded that the main object in the preparation of the book was to find sale for it among underwriters throughout the country, as well as some of the foreign insurance companies that have been doing business on the lakes. The committee was in favor of again contributing 1 cent a ton for wooden vessels and 1½ cents a ton for steel vessels rated in the Inland Lloyds Register. The meeting decided that the Lake Carriers' Association could not be bound by an agreement of this kind, but the committee was instructed to continue relations with the underwriters and recommend in all cases that individual vessel owners pay dues spoken of, as the underwriters would have it understood that unless payment is made vessels will not be given a rating or valuation in the register. The committee will meet with the underwriters here to-morrow.

ACTION ON FREIGHTS AGAIN DELAYED.

Although the main cause of a large attendance at this meeting was the announcement that some action would be taken on the question of a combination of interests to secure profitable rates of freight during the coming season of navigation, it can hardly be said that the outcome in this regard was satisfactory. At different times during the several sessions this subject was referred to, but there were no leaders and no definite plans to create enthusiasm. It was a repetition of the talk that has been going on for several weeks past. A willingness to take up any scheme that would seem at all practicable was expressed

[*Continued on page 16.*]

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

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ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1892.	1891.	1890.	1892.	1891.	1890.
No. vessel passages	12,580	10,191	10,557	3,559	4,207	3,389
Ton'ge, net regist'd	10,647,203	8,400,685	8,454,435	7,712,028	8,698,777	6,890,014
Days of navigation..	223	225	228	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

THE bill giving the supervising inspector general of steam vessels power to detail, under the direction of the secretary of the treasury, assistant inspectors from local inspection districts to inspect boiler plates at the mills where the same are manufactured, passed the senate on Thursday last and will in all probability receive the signature of the president and become a law. The object of this amendment to the present law, according to the department recommendation, is to provide for testing plates at the mills where manufactured instead of at the boiler works, and thus save the expense frequently incurred of returning plate that has been rejected to the mill, besides saving time to the boiler manufacturers who are compelled to await the return of new material when any part of an order is rejected. The steel manufacturers have been working under disadvantages, of which the new law justly relieves them, but the tests of material should not be made within the works of these manufacturers. These tests should be made by samples as at present in the office of the local inspection board nearest to the works. The assistant inspector should not be subjected to the danger of influence from steel makers in conducting tests within their mills. He could be employed in seeing the samples cut and in marking both samples and plates with similar stamps. The sample would be forwarded to the local office of the inspection service and there would be little delay in notifying the manufacturer as to whether the plate from which it was taken had met with the requirements.

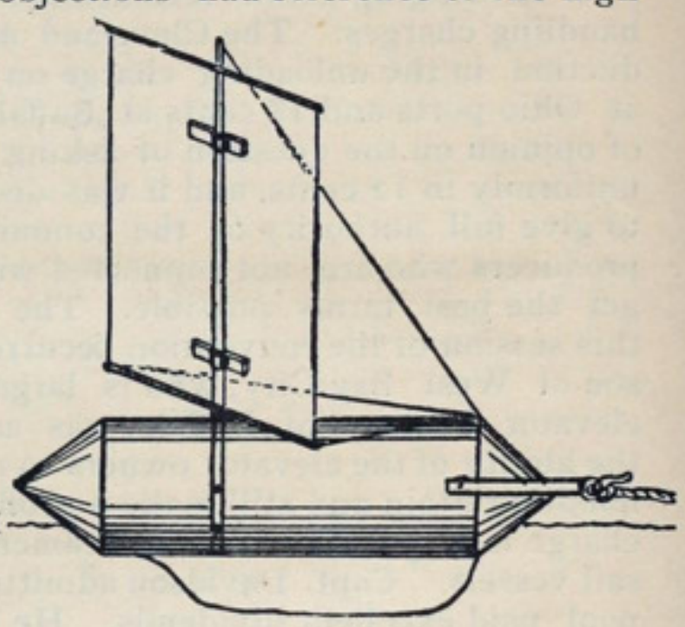
IN accordance with the plans of the people of Duluth and Superior to secure continuous appropriations for dredging to a depth of 20 feet, the entire basin which forms a harbor for these two cities, Congressman Haugen has introduced in the house of representatives a joint resolution directing the secretary of war to appoint a commission of engineers to examine and report upon the cost of the improvement. This resolution, which has been referred to the committee on rivers and harbors, should receive support from all members of congress representing lake districts. It is the first step towards deepening lake harbors to conform to the 20-foot channel that will soon be a reality in the connecting waters of the lakes.

ASSISTANT SECRETARY MCADOO of the navy has sent to congress a bill authorizing the secretary of the navy to furnish to any state, upon the written application of the governor thereof, a vessel of the navy, to be selected from such vessels as are not suitable nor required for general service, to be used by the regularly organized militia of the state for the purposes of drill and instruction. Representatives from lake states should support this bill. With very little encouragement a naval reserve could be organized on the lakes, and a few of the old vessels of the navy utilized to advantage in such a service. If there is any objection to a militia of this kind on account of treaty relations with Great Britain, steps should be taken to modify the agreement.

NOTWITHSTANDING the magnitude of the dredging business on the lakes, there are few if any first class dredges or dredging plants owned here. There are, of course, several companies that are very well equipped with dredges, but the plants are not modern, as they have been made up by additions and improvements that have followed a modest beginning. It would seem, then, that within the next two or three years, the volume of business in the dredging line will demand improvement in the present facilities. The cities of Duluth and Superior have already entered upon a systematic effort to secure a deep harbor to correspond with the 20-foot channel, and the completion of this channel will mark an era of deeper harbors in all parts of the lakes. Railway companies and dock companies will in many places construct docks in outer harbors that will be suitable to the requirements of deep draft vessels, and these improvements will come in advance of the regular river and harbor work conducted by the general government.

A Substitute for Life Line Guns.

In the several attempts to force merchant vessels on the lakes to carry guns for shooting lines to shore in event of accident, one of the principal objections had reference to the high cost of the patent appliances which manufacturers were trying to sell through endorsements sought from congress and the board of supervising inspectors. The probability of the guns and projectiles becoming useless through long periods of idleness, was also an objection to the proposed law. Now comes a correspondent in the Scientific American who suggests that an arrangement similar to that shown in the cut be rigged up and carried on board ship. In the case of a vessel stranding where life savers on shore could not get a line off on account of wind or other difficulties, this air-tight can with its bit of sail could be thrown overboard with a line attached and allowed to float ashore. The bottom of this can is weighted with lead, and on this account the correspondent referred to seems to think it would stand up to the wind and sea and drift ashore, no matter how roughly it was handled. There are experienced sea-faring people who are not, however, of the opinion that such a float would reach shore in a storm. They claim that the undertow would act against its usefulness. Still the device would not be costly or cumbersome on any ship, and it might be tried under some circumstances with success.



Report of the Engineering Congress.

A Washington exchange says that Passed Assistant Engineer Walter M. McFarland, U. S. Navy, is receiving many congratulations over the successful termination of the work connected with the compilation of the two valuable volumes containing the papers read before the marine and naval branch of the engineering congress at Chicago last August. Mr. McFarland not only performed the duties of secretary of the section, but assisted the publishers of the volumes to the extent of reading all the proof, constructing the invaluable index, and gave advice and assistance in the matter of placing and arranging the most valuable and interesting plates with which the work is illustrated. This work is being widely sought after by scientists and engineers throughout the world. The two volumes will be furnished by the MARINE REVIEW for $10, which is the regular subscription price.

Steel Screw Steamer for the Lakes.

A DESCRIPTION OF THE KIND OF VESSEL THAT WOULD BE GIVEN A HIGH RATING BY THE BUREAU VERITAS—SOME SUGGESTIONS REGARDING A SHIP WITH WOOD BOTTOM.

Two drawings representing the midship section of a steel vessel are printed on the following pages. They were prepared by Capt. F. D. Herriman of Chicago, American lake representative of the Bureau Veritas. The particulars of construction, which follow, have reference to drawing No. 1, as drawing No. 2 is practically a duplicate of No. 1 so far as the steel construction is concerned. Considerable interest will, however, be attached incidentally to drawing No. 2, as it is representative of a vessel having a strong steel inner bottom, with slight increase in lower frames and margin plate, and with the outer bottom planked from the upper turn of the bilge with 6 or 7-inch oak or elm, the bilge being diagonally strapped, connecting the steel hull with the continuous foot plate of the outside girder. Drawings of the ends of this vessel with wood bottom may be shown in a future issue. "I have also considered and made drawings of a wood bottom without cutting the frames," says Capt. Herriman, "and I have no doubt that our many lake ship builders will be able to improve very much upon these plans, and in time produce and perfect a steel steamer with the inner bottom or tank top as effective as the outside plating,—covering the bottom frames with 6-inch oak or elm as a chafer, watertight of course, but with indifference as to the safety of the cargo shou d the bottom be damaged by stranding."

In submitting the midship section of a steel vessel (drawing No. 1), Capt. Herriman says: "The scantlings of this vessel are not quite up to the ocean requirements, yet she would command the highest class in the Register Veritas for the great lakes. My plan of issuing special rules for the classification of lake vessels did not meet with the approval of the administration of the Bureau Veritas. From the many blue prints and drawings of nearly every type of lake vessel, together with data in connection with lake navigation, and what is required of these vessels during the open season, the manner of loading and discharging, dispatch, etc., that I have from time to time been able to transmit them during the past eighteen months, the committee is led to believe that their rules and tables for the construction of vessels for the great coasting trade are alike consistent and suitable for the great lakes. In presenting the drawing with data relative to the distribution and particulars of scantling, I beg the indulgence of the many able men who design and build lake vessels, and any suggestions for improvement will be appreciated."

The dimensions and particulars of construction accompanying drawing No. 1 are as follows:

Length between perpendiculars.....300 feet.
Beam, moulded..... 41 feet.
Depth, moulded..... 24 feet.

Tabular number as per Bureau Veritas rules, 206,640.

Proportions are under 7½ beams in length and under 12½ depths in length.

The tensile strength for plate or bar steel to show from 27 to 32 tons per square inch of the original section.

The elongation at rupture to be at least 20 per cent. in length of 8″; for plate ¼″ or less, 16 per cent. will be accepted.

Stem.—10″ by 3″ gradually reduced from light load line to two-thirds its area at head.

Stern post.—10″ by 4″ reduced above counter to two-thirds its tabular area.

Rudder stock —8″, heel pintle 4″.

Main frames.—4½″ by 3½″ by 14-32″, spaced 24″.

Reverse frames.—3½″ by 3½″ by 12-32″, on every frame to above between-deck bindings, and on alternate frames to upper deck; intermediate 3½″ by 3½″ by 12-32″, angles fitted forward of collision bulkhead to between-deck bindings.

Floors.—22″ by 14-32″ for half vessels length; ends 12-32″; under engines and in bunkers 17-32″, extending to tank top with double reverse angle bars on upper edge of same; all other floors capped with single reverse angles. When floor plates are in two pieces, the butts to be properly shifted and straps or overlap-butts treble-riveted.

Center keelson plate.—42″ by 18-32″, riveted to keel plate with continuous 4½″ by 4½″ by 14-32″ angles; to tank top with 3½″ by 3½″ by 12-32″ continuous longitudinal angle bars, and secured to floors on either side by 10″ by 12-32″ brace plates, and vertical reverse angle lugs crossing floors and center keelson plate. Butt straps of center keelson plate to be double 11½″ by 13-32″ treble riveted, and butts of all longitudinal angles to be secured with lugs and three rivets either side of butt. All keelson angles to retain their thickness for two-thirds the vessel's length, a reduction of 2-32″ being allowed beyond this length.

Side girder keelsons.—13-32″ about 4′ 6″ apart, with intercostal plates between alterate floors riveted to lower edge of girder, and to shell plate and floors with lugs size of reverse angle bars. The girder plates to be secured to tank top and top of floors by continuous longitudinal reverse angles; butt straps or overlap butts to be treble riveted for half the vessel's length amidships and double riveted at ends. Girders to extend as far forward and aft as practicable.

Bilge brackets.—Under margin plates 2-32″, less in thickness than given for floor plates, to extend the full width of lower belt frames, with reverse floor angles curling over same.

Tank top.—The midship plate of tank top to be 14-32″, with butt straps double riveted Margin plate 12-32″, turned up and zig zag riveted to hull plating, or let in between frames and secured to hull plating with frame angles; butts of margin plate double riveted. The intermediate tank top plating to be 10-32″ with single riveted butts and all longitudinal seams 4″, lap, and single riveted. The tank top in engine room to be increased 2-32″.

Upper deck beams—7″ by 5″ by 5-16″; T bulb on alteruate frames.

Lower deck beams—9″ by 5″ by 11-32″, T bulb or channel, or they may be any other approved form. All beams to have welded knee plates two and one-half times their depth in length for attachment to frames; or, if preferred, plates riveted to beams of same thickness having the required length and width. All laid deck as well as poops, bridge houses, forecastle and raised decks to have beams on alternate frames, and half beams in wake of hatches and other openings. Rivet holes for attachment of beams to frames should be drilled when beam is in place.

Gusset plates—On margin plate 12-32″, the width of bilge brackets, and secured to margin plate and faced with reverse angles.

Hold pillar stanchions—Of I or channel bar, equal to the tabulated 2 5-8″ round stanchion under every beam; supported by longitudinal angles of the size of frame angles either side, or by iron plate and oak bar between stanchions.

Between-deck pillar stanchions—Of I or channel bar, equal to the tabulated 3½″ round stanchion under every beam; or under a suitable fore and aft girder attached to the beams.

Watertight bulkheads—Lower two-thirds, 10-32″; upper one-third, 8-32″; riveted between double frames; single frames accepted if width of frame will will admit of double riveting. To be stiffened vertically the whole length, with frame angles not to exceed 30″ apart, and horizontally every 4 feet apart to the upper deck of collision bulkhead and to the second deck at all others, the vertical stiffeners to be connected at both ends with floors and beams. Bulkhead liners of outside strakes of plating to extend from the frame before to the frame abaft the bulkhead, unless otherwise compensated for.

Belt or web frames between decks—18″ by 12-32″, faced on their inner edge with double angle bars of the size required for reverse frames, or a bulb of equal strength instead, and spaced nine frames apart; in engine room and coal bunkers, six frames apart.

Belt or web frames in hold—24″ by 14-32″ fitted above and below hold stringer plate with double angle bars the size of reverse frames, fitted to their inner edges and riveted to margin plate and bilge brackets between reverse frame angle lugs, the head properly secured to hold beam and connected with hold stringer plate by double angle lugs of size of frames; these belts to be spaced nine frames apart and in engine room six frames apart.

Hold stringer plate—24″ by 14-32″ for two-thirds length of vessel amidships; reduced at ends to 12-32″ and secured by proper hooks at peaks, the plate to be let in between frames and riveted to hull plating with angles the size of reverse frames, and continuous longitudinal double 3½″ by 3½″ by 12-32″ angles riveted to the inner edge of stringer plate; also a 4″ by 4″ by 13-32″ continuous angle bar to be fitted fore and aft on inner edge, riveted through stringer and reverse angles and connected with web frames by frame angles above and below stringer plate. Bracket knee plates the thickness of stringer to be riveted to alternate frames and to stringer plate.

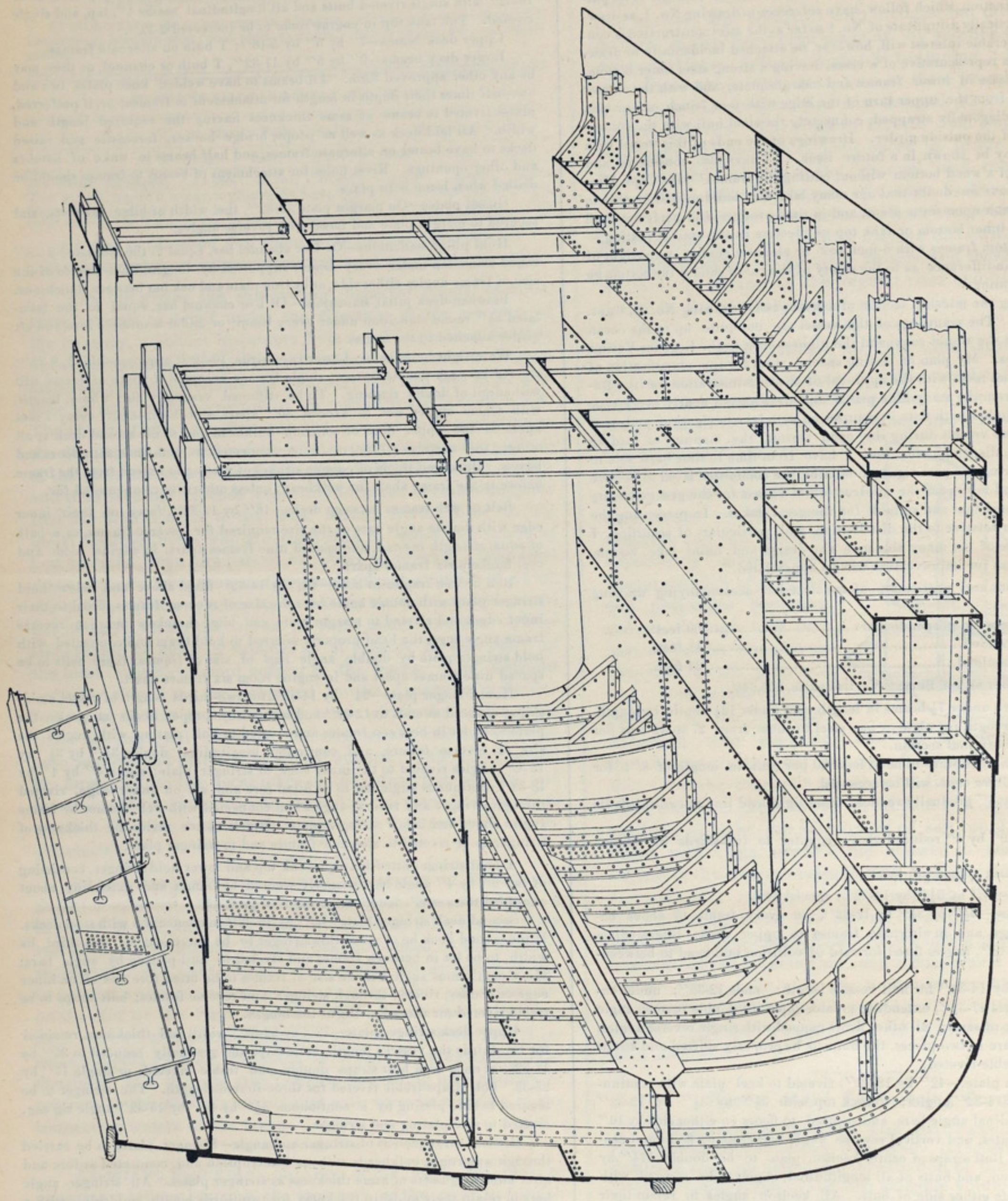
A hold stringer fitted between tank top and lower hold stringer, consisting of two 6″ by 4″ angle bars properly secured to frames and extending about one-third the vessel's length from the fore peak aft.

Second deck stringer plate—33″ by 16-32″ in connection with steel decks. If the second deck be of wood this stringer to be increased by one-third its width, to be let in between frames and riveted to hull plating by angle bars; also a continuous angle bar the size of frames to be fitted fore and aft on inner edge of frames, riveted through stringer and reverse frames; butt straps to be treble riveted for three-fourths of the length.

Upper deck stringer plate—72″ by 22-32″ width and thickness, retained for two-thirds the vessel's length amidships and gradually reduced to 36″ by 18-32″ at ends with butt straps double and treble riveted; or single 17″ by 25-32″ butt straps treble riveted for three-fourths length. The stringer to be secured to side plating by a continuous 4½″ by 4½″ by 15-32″ angle zig zag, riveted to side plating and stringer.

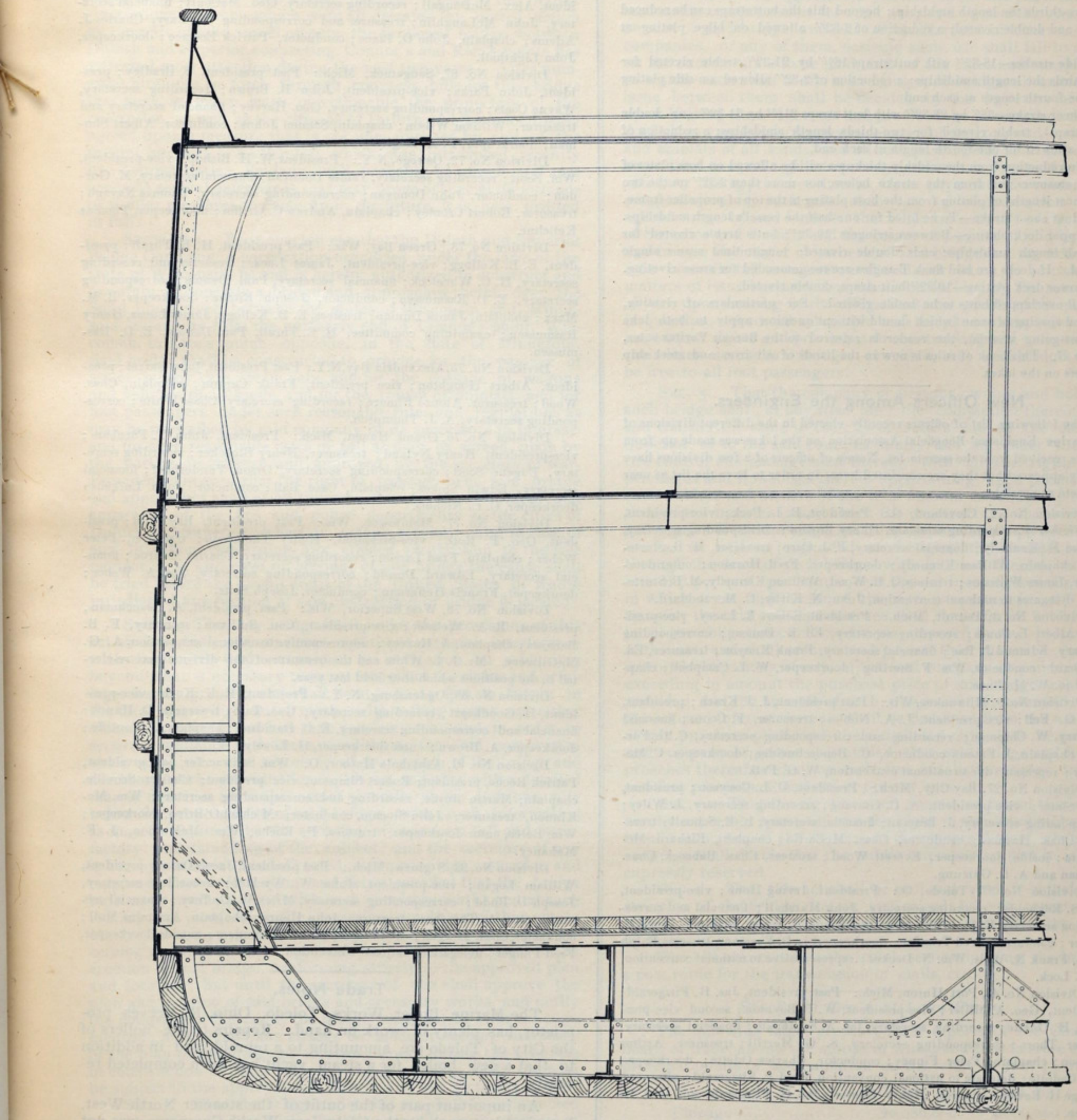
General arrangement of stringer and angle—Stringer plates to be carried through watertight bulkheads without interruption and connected at fore and after ends by gussets of same thickness as stringer plates. All stringer angle bars to retain their midship thickness for two-thirds length amidships, with a reduction of 2-32″ allowed in thickness at ends. When holes are cut in stringer plates for pumps or discharge pipes, compensation is to be made. Double reverse angle lugs must be fitted on frames and floors over three-fourths the vessel's length in way of keelson, hold, side and intermediate stringers, to which the stringer angles are to be riveted and also to reverse frames. Lugs must be fitted to all frames in the after body of the vessel, the length of the lug to be sufficient to receive at least three rivets in the frames and floors.

[*Continued on page 14.*]



STEEL SCREW STEAMER FOR THE GREAT LAKES—Fig. 1.

Dimensions—Length between perpendiculars, 300 Feet.
Beam, moulded, " 41 "
Depth, " " 24 "



STEEL SCREW STEAMER WITH WOOD BOTTOM—Fig. 2.

Dimensions—Length between perpendiculars, 300 Feet.
Beam, moulded, - - - 41 "
Depth, " - - - - 24 "

[*Continued from page 11.*]

Keel plate—36″ by 25-32″, continuous; butt straps 19″ by 27-32″, treble riveted, properly shifted with adjoining strake.

Garboard strake—19-32″ with butt straps 16¾″ by 21-32″ and treble riveted for two-thirds length amidships.

Bottom plating—18-32″ with butt straps 16¾″ by 21-32″, double riveted.

Two bilge strakes—18-32″ with butt straps 16¾″ by 25-32″, treble riveted for two-thirds the length amidships; beyond this the butt straps can be reduced 3-32″ and double riveted; a reduction of 2-32″ allowed on bilge plating at ends.

Side strakes—18-32″ with butt straps 16¾″ by 21-32″, treble riveted for two-thirds the length amidships; a reduction of 2-32″ allowed on side plating for one-fourth length at each end.

Sheer strake—38″ by 28-32″ with butt straps 21¼″ by 31-32″ (or double butt straps), treble riveted for two-thirds length amidships; a reduction of 2-32″ allowed for one-fourth length at each end.

No reduction from the midship thickness will be allowed on boss plates of screw steamers, or from the strake below, nor more than 2-32″ on the two aftermost lengths of plating from the boss plating to the top of propeller frame.

Liner sheer strake—To be fitted for one-half the vessel's length amidships.

Upper deck plating—Between stringers 10-32″; butts treble riveted for one-half length amidships; ends double riveted; longitudinal seams single riveted. If decks are laid flush T angles are recommended for seam riveting.

Lower deck plating—10-32″ butt straps, double riveted.

All overlapped butts to be treble riveted. For particulars of riveting, size and spacing of same (which should without question apply to both lake and sea-going vessels), the reader is referred to the Bureau Veritas rules, article 27. This book of rules is now in the hands of all iron and steel ship builders on the lakes.

New Officers Among the Engineers.

The following list of officers recently elected in the different divisions of the Marine Engineers' Beneficial Association on the lakes was made up from reports received from the secretaries. Names of officers of a few divisions have already appeared but they are reprinted here, in order to have the list as near complete as possible:

Division No. 2, Cleveland, O.: President, R. L. Peck; vice-president, John N. Kirby; recording secretary, Henry Burton; corresponding secretary, William H. Kennedy; financial secretary, P. J. Carr; treasurer, M. B. Sturtevant; chaplain, William Kennedy; doorkeeper, Fred Harmon; outer doorkeeper, James Williams; trustees, J. B. Wood, William Kennedy, M. B. Sturtevant; delegates to national convention, John, N. Kirby, C. M. Stoddard.

Division No. 3, Detroit, Mich.: President, Robert R. Lacey; vice-president, Albert L. Jones; recording secretary, Ed. R. Duncan; corresponding secretary, Edmund J. Rae; financial secretary, Frank Kenyon; treasurer, Ed. Blanchard; conductor, Wm. F. Sterling; doorkeeper, W. L. Campbell; chaplain, Jno. W. McClure.

Division No. 9, Milwaukee, Wis.: Past president, J. J. Krach; president, Wm. G. Fell; vice-president, J. A. Nobles; treasurer, F. Coons; financial secretary, W. Chipman; recording and corresponding secretary, C. G. Forsyth; chaplain, J. Eaton; conductor, C. Bendschneider; doorkeeper, C. McCartey; representative to national convention, W. G. Fell.

Division No. 27, Bay City, Mich.: President, D. L. Covyeou; president, N. P. Slater; vice-president, A. C. Gartung; recording secretary, J. Wiley; corresponding secretary, J. Braman; financial secretary, L. E. Schuall; treasurer, Chas. Harman; conductor, Chas. McCartin; chaplain, Richard McNamara; inside doorkeeper, Everett Wood; trustees, Chas. Babcock, Chas. Harman and A. C. Gartung.

Division No 37, Toledo, O.: President, Irving Hone; vice-president, Geo. S. Reynolds; recording secretary, John Marshall; financial and corresponding secretary, E. D. Lock; treasurer, Frank N. Weis; chaplain, James E. Parker; conductor, Fred Tranfler; doorkeeper, L. D. Furman; trustees, Ralph Hone, Frank N. Weis, Wm. N. Decker; representative to national convention, E. D. Lock.

Division No. 43, Port Huron, Mich.: Past president, Jas. H. Fitzgerald; president, Geo. A. Miller; vice-president, W. P. Boynton; second vice-president, H. Odette; recording secretary, Jas. A. Southgate; financial secretary, Walter Thorn; corresponding secretary, S. G. Merrill; treasurer, Arthur Armson; chaplain, Peter Finney; conductor, Charles Odette; doorkeeper, Jas. Cadotte; delegate to national convention, Fred P. Fitzgerald; alternate, George H. Bowen; trustees, Henry Odette, Jas. H. Fitzgerald and Geo. H. Bowen.

Division No. 48, Sandusky, O.: Past president, John Hegemer; president, Wm. F. Meyer; vice-president, John Magnussen; treasurer, John Hegemer; financial secretary, Wm. T. VanDusen; corresponding secretary, Chas. C. Smith; recording secretary, John Brokate; chaplain, Fred Bremer; conductor, Geo. Moore; doorkeeper, Nelson Lockhart; board of trustees, John Hegemer, Wm. T. Mayer, Charles C. Smith; examining committee, Henry Jesson, Phil. C. Mayer, Michael, Ostermann; sick committee, Wm. F. Mayer, Henry Jessen, Michael Ostermann; printing committee, John Hegemer, Wm. F. Mayer, Phil. C. Mayer, Chas C. Smith, Henry Jesson, John A. Shirg.

Division No. 53, Marine City, Mich.: President, H. C. Wonsey; vice-president, John Volker; treasurer, James Mitchell; financial secretary, Michael Britz; corresponding secretary, Harry Stone; recording secretary, Henry Wood; conductor, Frank Oulette; chaplain, David Burns; doorkeeper, Conrad Krause; outside doorkeeper, Peter Sicken; delegate to national convention, Frank Parker.

Division No. 55, Cheboygan, Mich.: President, J. W. Brown; vice-president, Alex. McDougall; recording secretary, Geo. McCourt; financial secretary, John McLaughlin; treasurer and corresponding secretary, Charles J. Adams; chaplain, John O. Place; conductor, Patrick Eustace; doorkeeper, John Lighthall.

Division No. 67, Saugatuck, Mich.: Past president, S. Bradley; president, John Parks; vice-president, John B. Brown; recording secretary, Wayne Coats; corresponding secretary, Geo. Harvey; financial secretary and treasurer, William Wilson; chaplain, Samuel Johns; conductor, Albert Shuman; doorkeeper, F. A. Englester.

Division No. 72, Oswego, N.Y.: President, W. H. Bishop; vice-president, Wm. Scott; recording secretary, James Donovan; financial secretary, M. Gordon; conductor, John Donovan; corresponding secretary, Thomas Navagh; treasurer, Robert Cronley; chaplain, Andrew C. Griffin; doorkeeper, Thomas Kellehur.

Division No. 73, Green Bay, Wis.: Past president, H. R. Thrall; president, E. B. Kellogg; vice-president, James Lucas; treasurer and recording secretary, H. C. Wheelock; financial secretary, Paul Dennis; corresponding secretary, E. D. Rasmussen; conductor, Joseph Ritche; doorkeeper, B. M. Marx; chaplain, James Dunlap; trustees, E. B. Kellogg, James Lucas, Henry Rasmussen; examining committee, H. R. Thrall, Paul Dennis, E. D. Rasmussen.

Division No. 75, Alexandria Bay, N.Y.: Past President, John Farrel; president, Albert Houghton; vice president, Frank Capron; chaplain, Chas. Wood; treasurer, Alonzo Elmore; recording secretary, Chas. White; corresponding secretary, A. J. Thompson.

Division No. 76, Grand Haven, Mich.: President, John T. Farnham; vice-president, Henry Nyland; treasurer, Henry Bloecker; recording secretary, Eugene Scott; corresponding secretary, Orson Vanderhoef; financial secretary, Edwin Stokes; chaplain, Case Ball; conductor, John Luikens; doorkeeper, C. C. Nichols.

Division No. 77, Manitowoc, Wis.: Past president, Ray Flint; president, Geo. P. Roth; vice-president, Henry Thompson; treasurer, Peter Weber; chaplain, Fred Larson; recording secretary, Charles Monroe; financial secretary, Edward Dusold; corresponding secretary, Jos. A. Weber; doorkeeper, Francis Heffernan; conductor, Joseph Seitz.

Division No. 78, West Superior, Wis.: Past president, A. Beauchman, president, R. A. Webster; vice-president, Con. Sullivan; secretary, F. B. Barrows; chaplain, A. Harvey; representative to national convention, A. G. McGillvery. Mr. J. L. White and the treasurer of this division were re-elected to the positions which they held last year.

Division No. 89, Ogdensburg, N. Y.: President, R. K. Koch; vice-president, H. Goodheart; recording secretary, Geo. Tate; treasurer, D. Hanna; financial and corresponding secretary, E. C. Davidson; chaplain, J. Conliffe; doorkeeper, A. Brown; outer doorkeeper, H. Lovely.

Division No. 91, Ashtabula Harbor, O: Wm. Schwacofer, past president, Patrick Roche, president; Robert Simpson, vice president; Charles Scoville, chaplain; Martin Joyce, recording and corresponding secretary; Wm. McKinnon, treasurer; John Slocum, conductor; Michael O'Brien, doorkeeper; Wm. Bolee, outer doorkeeper; trustees, P. Roche, Wm. McKinnon, J. F. Mahaney.

Division No. 92, Saginaw, Mich.: Past president, Jacob Oscar; president, William Logan; vice-president, John W. Wyckoff; recording secretary, Joseph D. Budd; corresponding secretary, Miles W. Gaffney; financial secretary, Geo. A. Thrasher; treasurer, John Henry; chaplain, Amandus Moll; conductor, Chas. Morgan; doorkeeper, Millard, Saunders; outside doorkeeper, Fred Pfluger; delegate to national convention, Miles W. Gaffney.

Trade Notes.

The Marine Boiler Works, Toledo, Ohio, R. Reeves proprietor, has plenty of work on hand. Repairs to the boilers of the City of Toledo are amounting to a rebuild, and in addition to that a new boiler for a steam yacht has been completed recently.

An important part of the outfit of the steamer North West, launched last week by the Globe Iron Works Company, was not mentioned. Reference is made to the pumping outfit furnished by the Geo. F. Blake Manufacturing Company, New York.

Drawing departments of ship building and marine engine building concerns will receive a valuable illustrated work on fine mechanical tools by addressing L. S. Starrett, Athol, Mass. Mention the REVIEW when writing.

British charts of Lake Superior cover the entire north shore. $1.

A Model Bridge Bill.

On numerous occasions of late the shipping interests of this country have had reason to feel grateful for the passage, a few years ago, of the law which gives to the war department the right to protect water commerce in all matters pertaining to the construction of bridges or other obstructions in navigable rivers, as well as the more important channels. Next to the Detroit river bridge projects, which were all defeated by united action on the part of lake vessel owners, the proposed bridge between Duluth and Superior connecting Connor's and Rice's points has attracted most attention during the past two years. After numerous attempts to force through congress bills for this bridge that were in many ways objectionable, the projectors of the enterprise, as well as the citizens of Duluth and Superior, finally agreed upon a measure that is not now opposed by any of the several interests. As this bill, which was introduced recently by Representative Baldwin, will probably be passed, and as it contains several safeguards that may prove of special importance in similar measures to come up in the future, it is here printed in full:

SECTION 1. Be it enacted etc.,that the Duluth and Superior Bridge Company, a corporation organized under the laws of the state of Wisconsin, be and is hereby authorized to construct and maintain and operate a bridge and approaches thereto over the Saint Louis river, between the states of Wisconsin and Minnesota, extending from the northerly end of Connor's point, Wisconsin, to Rice's point, opposite, in the state of Minnesota. Said bridge shall be constructed to provide for the passage of street railway cars, steam cars, and for the passage of wagons and vehicles of all kinds, and for the transit of animals, and for foot passengers under such reasonable rules and regulations as may be prescribed by said company or its successors in interest, and for such reasonable rates of toll as may be agreed upon by the parties in interest and approved by the secretary of war. Provided, however, that the right of passage over said bridge and approaches shall at all times be free to the employes and apparatus of the fire and police departments of the cities of Duluth and Superior, when in actual service. And in case of any litigation concerning any alleged obstruction to the free navigation of said river on account of said bridge the cause shall be tried before the circuit court of the United States in whose jurisdiction any portion of said obstruction or bridge is located.

SEC. 2. That any bridge built under the provisions of this act shall be built and constructed without material interference with the security and convenience of navigation on said river beyond what is necessary to carry into effect the rights and privileges hereby granted, and shall be at least 24 feet in height in the clear above high water mark; with rafting spans on either side of the draw of not less than 250 feet each: and, in order to secure compliance with these conditions, the said corporation shall submit to the secretary of war a plan of the bridge and accessory works provided for in this act, together with a detailed map of the river for a distance of one mile above and one mile below the proposed site of said bridge, with such information as may be required by the secretary of war for a full and satisfactory understanding of the subject; and the secretary of war is hereby authorized and directed, upon receiving such plan and map and other information and being satisfied that the bridge built upon such plan and with such accessory works and at such locality will conform to the prescribed condition of this act, to notify the company that he approved the same; and upon receiving such notification the said company may proceed to the erection of said bridge, conforming strictly to the approved plan and location; but until the secretary of war shall approve the plan and location of said bridge and accessory works, and notify the company of the same, the bridge shall not be built or commenced; and should any change be made or become necessary in the plan of the bridge or accessory works during the progress of construction or after completion, such change shall likewise be subject to the approval and direction of the secretary of war.

SEC. 3. That the bridge under this act shall be constructed as a pivot drawbridge, with the draw over the main channel of the river at an accessible and navigable point, and with a span of not less than than 200 feet in length in the clear on each side of the central or pivot pier of the draw, measured at right angles to the axis of the channel. Provided, that said draw shall be opened promptly on reasonable signal for the passage of boats, vessels, and other water craft; and provided further, that said company or corporation shall maintain at its own expense, from sunset till sunrise through the season of navigation, such lights or other signals on said bridge as the light house board shall prescribe. The superstructure of said bridge shall be constructed of iron and steel, and be sufficiently supported by abutments and piers of solid masonry.

SEC. 4. That all street and other railway companies desiring the use of said bridge shall have and be entitled to equal rights and privileges relative to the passage of cars over the same and over the approaches thereto upon the payment of a reasonable compensation for such use; and in case the owner or owners of said bridge and the several street and other railway companies, or any of them, desiring such use shall fail to agree on the sum or sums to be paid, and on the rules and conditions to which each shall conform in using said bridge, all matters at issue between them shall be decided by the secretary of war, upon hearing the allegations and proofs of the parties in question. And all owners and persons in charge of wagons and vehicles and animals of all kinds, and all foot passengers, shall have and be entitled to equal rights to passage and transit over said bridge, and over the approaches thereto, upon payment of a reasonable compensation for such use, such rate of compensation to be agreed upon by and between the common councils of the cities of Superior and Duluth and the owner or owners of said bridge; and in case the owner or owners of said bridge and the said common councils fail to agree on the sum or sums to be paid, all matters of issue between them shall be decided by the secretary of war, upon hearing of the allegations and proofs of the parties in question. And all telegraph and telephone companies shall have equal rights and privileges in constructing and maintaining their lines across said bridge, provided, that said bridge shall be free to all foot passengers.

SEC. 5. That the company or persons owning and holding such bridge shall, at any time after the completion thereof, sell and transfer the same to the city of Duluth and to the city of Superior, or to the said counties jointly, and surrender the entire control and management thereof, with all the rights and privileges and franchises thereto appertaining, upon payment to such holders and owners of the total amount expended up to the time of the transfer in and about the construction, maintenance, and repairs of said bridge and its approaches and accessory works, as well as expended in dredging the channel to and through the draw of such bridge, with interest thereon at the rate of 7 per cent. per annum, less the net income from the tolls; in which event, and in case of the due consummation of such transfer, the said counties or cities shall thenceforth be subject to all the obligations and conditions imposed by the provisions of this act, and shall assume and pay at their maturity the unmatured obligations, if any, of the said company or persons, not exceeding in amount the purchase price of said bridge as herein provided, and the amount of such obligations so assumed, with the accrued interest thereon, shall be deducted from the amount of said purchase price, and the remainder only shall be paid to said company or persons; provided, that said bridge and its approaches thereafter shall be made free of tolls to wagons, teams, and foot passengers, and street railway cars.

SEC. 6. That the right to alter, amend, or repeal this act is hereby expressly reserved; and the right to require any changes in said structure, at the expense of the owners thereof, whenever congress shall decide that the public interests require it, is also expressly reserved.

SEC. 7. That this act shall be null and void if actual construction of the bridge therein authorized be not commenced within one year and completed within three years from the date of the passage of this act.

The bill also contains the usual section making the bridge a post route for the transmission of mails, etc.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Jan. 13, 1894:

	Wheat, bu.	Corn, bu.
Chicago	20,086,000	4,806,000
Duluth	9,671,000	.....
Milwaukee	896,000	.....
Detroit	1,702,000	34,000
Toledo	2,704,000	485,000
Buffalo	2,617,000	706,000
Total	37,676,000	5,031,000

At the points named there is a net increase for the week of 435,000 bushels of wheat and 888,000 bushels of corn.

[*Continued from page 9.*]

on all hands, but other routine business was crowded to the front until within an hour or two of adjournment on Thursday evening. Only two written plans were presented. One of these, by Capt. J. S. Dunham of Chicago, gave evidence of careful preparation, and was listened to with great interest, but did not meet the views of the leading men who have set their minds on not entering into any combination that does not propose laying up a certain proportion of the tonnage at the outset. Mr. Dunham's scheme was to have sections of the lakes controlled by agents of the Lake Carriers' Association, who would give boats cargoes in regular order. The detail was well worked out, but there were some serious objections to parts of it. Mr. Dunham had, however, only submitted it as a foundation to be improved upon. M. A. Bradley of Cleveland, proposed that in all cases where diversified interests were not involved, one-half of the tonnage be started on May 1 and the second half June 1. Where varied interests prevented this, the vessel or vessels in question could be started May 15. In addition to the systematic delay, in starting, Mr. Bradley would have minimum rates established to be operative until Aug. 1, and after the latter date owners were to be free as at present in all freight matters. These plans were both discussed, and criticized, and such leading owners as Capt. Thomas Wilson, M. A. Bradley, A. A. Parker, H. A. Hawgood, David Vance, B. L. Pennington and others would have it understood by their remarks that they were willing to do all in their power to support any committee report that might be agreed upon as a result of the discussion. It was accordingly agreed to appoint such a committee, with the understanding that another general meeting will be held as soon as a report is ready. The committee consists of the following gentlemen: M. A. Bradley, Thomas Wilson and H. A. Hawgood of Cleveland; A. A. Parker and William Livingstone, Jr., of Detroit; J. S. Dunham of Chicago, David Vance of Milwaukee, G. G. Hadley of Toledo and Edward Smith of Buffalo. The association then adjourned with the understanding that the several committees entrusted with matters pertaining to reduced handling charges on cargoes will report at the first meeting of the finance committee in March.

FINANCIAL CONDITION OF THE ASSOCIATION.

The treasurer's report shows a total of $27,797 in receipts. This included a cash balance of $275.80 carried over from last year, $1,800 received from the government for maintenance of Detroit river lights, and $2,500 borrowed to begin business in 1893. The balance of receipts, $23,221.20 was from tonnage dues. Practically all of this money was expended during the year, as there is now a cash balance in the treasury of but $188.80. The new year begins with an indebtedness of a trifle over $1,000, but there is just about an equivalent in tonnage dues unpaid, so that the association is practically on an even footing in money matters. The receipts of the year have, then, not only covered the expenses incurred during the year, but have liquidated an indebtedness of $2,500 carried over from 1892. The treasurer's report, which was among the printed documents, gave an itemized account of all expenditures. The principal items are those representing the expenses of shipping offices and the salaries of shipping masters and officers of the association.

The tonnage of the association at the time of the last annual report was 579,919 tons. This has been increased in the past year to 606,205 tons. The association now numbers among its members 612 vessels, of which 384 are steamers, and 228 are schooners or barges. The average tonnage of the vessels in the association is about 1,000 net registered tons. There are very few vessels of the larger class on the great lakes which are not enrolled on the books. The various shipping offices have placed on vessels of the association during the season 11,839 men.

REPORT OF THE BOARD OF MANAGERS.

Secretary Keep's report, which represented practically a summary of the affairs of the board of managers, made up a very interesting paper, the most important part of it having reference to legislative matters. As regards the policy of the association on this score the report says: "The association adheres to its original determination not to act in local matters, and to reduce the number of its applications for relief to congress as low as possible. It aims never to go to Washington except with some matter of large importance upon which it can present an overwhelming case. Nothing could possibly weaken the influence of the association so much as to have its name appended to petitions to congress for subjects of small importance or of doubtful merit. On the other hand no course could be taken which would so greatly increase the influence and prestige of the Lake Carriers' Association as to try to obtain a conviction on the part of senators and representatives that its support for any measure represents the united and harmonious action of all the vast vessel interests of the great lakes, and that such support can only be secured after careful examination by the association of the merits of every project presented."

THE HARTER BILL.

One piece of legislative work, with which Mr. Keep is very well acquainted, is discussed at length in the report. It is the Harter law, passed by the last congress. Of this law the report says: "Prior to the passage of the Harter bill, under the decisions of the supreme court of the United States, vessel owners in this country had been unable to exempt themselves from liability for loss or damage to the cargo where such loss or damage was in any way the result or fault or negligence on the part of the officers or crew of the vessel. The practical operation of this rule was as follows: The owner of the cargo always protected himself by marine insurance. In the case of loss or damage, the insurance company, having paid the loss, became subrogated to the rights of the cargo owner against the vessel, and where fault or negligence on board the vessel could be proved, it proceeded to enforce its claim against the vessel owner. The third section of the Harter bill provides that where a vessel owner has exercised due diligence to make his vessel seaworthy and properly to man and equip her, he shall not be liable for loss or damage to the cargo for any fault or negligence in navigation or management of the vessel, unless it be the fault or negligence of the ship's owner or manager. The law recognizes that when the owner of the vessel has done all he can do before she starts on her voyage, he has no further control over his officers and crew, and that loss or damage to the cargo resulting from their fault, negligence or errors in judgment should be left with the underwriters who have been paid to assume those risks, and that the underwriters should not be left free to take the premiums and then saddle the loss on the vessel owner. Vessel owners will appreciate the far reaching importance of this legislation. The application of this valuable privilege to vessels in the coastwise trade was largely the result of the skill and tact of Mr. F. J. Firth, and the board of managers takes pleasure in acknowledging its obligations to him for his valuable service in this matter."

A New Keel at the Chicago Yard.

Last week the REVIEW reported a new freight steamer and three steel hulls for tugs to be built by the Globe Iron Works Company, and this week information comes that the Chicago Ship Building Company will soon put down a keel for a Chicago syndicate. The engines and boilers will be builtt by the Cleveland Ship Building Company. Thus two lake concerns are put into activity. The hull will be 324 feet keel by 44 feet beam and the depth will be 28 feet, which will enable the boat to carry a full load when the 20-foot channel is completed. The engines will be 23, 38 and 62 by 40 inches stroke, and will be furnished steam by two 13 by 14 feet boilers. The outfit will be complete, including an electric light plant.

The Ship Masters' Association.

CHICAGO, Ill., Jan. 18, 1894.

The grand lodge of the Shipmasters Association began its third annual meeting at the Tremont house, Tuesday morning. The following officers and delegates were reported as entitled to seats by the committee on credentials: Alexander Clark, of Buffalo, grand president; W. A. Collier, of Cleveland, secretary; Lyman Hunt of Buffalo, grand treasurer; George McCullagh, of Detroit; W. E. Rice, of Port Huron; John Cochrane, of Milwaukee; George A. Shaw, of Marine City; C. E. Benham, of Cleveland; John McNeil, of Bay City, and George Tebo, of Chicago. An auditing committee was then appointed, and took up the rest of the day going over the accounts of the association for the year just closed. Grand Financial Secretary Collier reported that death losses of $1,000 had been paid on twelve members as follows: L. H. Weeks and E. K. Porter, lost on steamer W. H. Gilcher, Oct. 28, 1892; Capt. George W. Stoddard, lost on the Dean Richmond; Capt. Louis Guthrie, lost on the schooner Annie Sherman, and Albert Meswald, lost on the steamer Wocoken, all Oct. 15, 1893; William E. Ladner, who committed snicide on the steambarge M. F. Butters; Henry A. Sisson, Samuel Shannon, Thomas Maytham, James Webber, and Henry B. Vosburgh, all retired. A disability loss of $500 had been paid to William Rattray of Marine City, who had been injured when in command of the steamer Kittie M. Forbes two years ago. The association was reported to be in a flourishing condition. Its membership is

now about 1,000, all the branches having initiated many new members since the close of navigation.

The only important change in the rules of the association to come before this meeting will be one to alter the collection of death assessments. Hitherto the secretaries of the branches have collected only the regular dues, while the grand financial secretary has collected the death assessments directly from members. This double arrangement has resulted in some confusion. It is now proposed that the grand financial secretary will furnish the branch secretaries with the death assessments, and the latter shall collect the same, and forward the money to the grand financial secretary.

Nominations and election of officers took up most of the time Wednesday, the following elections resulting: Alex. Clark, grand president; Geo. McCullagh, first grand vice-president; John W. Cochrane, second grand vice-president; Lyman Hunt, grand treasurer; W. A. Collier, grand financial secretary; W. E. Rice, grand chaplain; C. E. Benham, grand marshal; Geo. Tebo, grand warden; C. H. Weeks, grand sentinel. There were several candidates for each office, but the re-election of Capt. Clark was almost certain. It was thought before balloting that F. B. Higgie, of Chicago, would be elected grand financial secretary, but Capt. Collier's services in this position were so satisfactory that he was re-elected notwithstanding his objections to serving another year.

Wednesday evening the third annual ball was given at the Temont house. Over 400 were present, and had a most enjoyable time. The affair was in charge of the following committees:

Arrangements.—Capt. A. L. Fitch, Capt. F. B. Higgie, Capt. J. R. Sinclair, Capt. James A. Calbick, Capt. George McDonald, Capt. George Tebo, Capt. David Cochrane.

Reception.—Capt. James Hogan, Capt. F. B. Higgie, Capt. J. W. Isbister, Capt. G. W. Flood, Capt. William Disher, Capt. A. L. Fitch, Capt. J. N. Comstock, Capt. Allen McIntire, Capt. J. W. Brown, Capt. Robert Reid.

Supper Committee.—Capt. William Turner, Capt. David Williams, Capt. George McDonald, Capt. David Beggs, Capt. H. R. Moore.

The visiting delegates were given a theatre party, Tuesday evening, by the Chicago branch, and all were there. The Chicago branch, by the way, has worked very hard to make this meeting an enjoyable affair. Its members have been arranging for the event for many weeks. Every effort was put forward to make the grand ball, the biggest occasion in the history of the association, and while it might be unfair to compare it with previous events of like nature, it can be said truly that it has not been excelled. The association was never more strong and better spirit never prevailed in its ranks than at present. It has long since passed the period of an experiment, and is on the lakes to stay. There has been but one drawback to the pleasures of the sessions. Some of the daily papers have printed pictnres of the grand officers. The grand president and the grand treasurer are the worst sufferers. It was but a passing shadow, ho wever, and the delegates soon forgot the cause of their sorrow.

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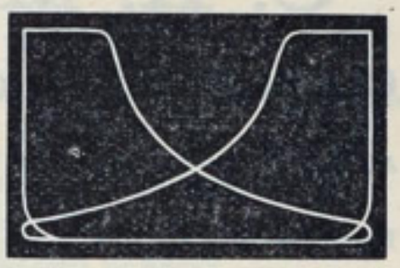

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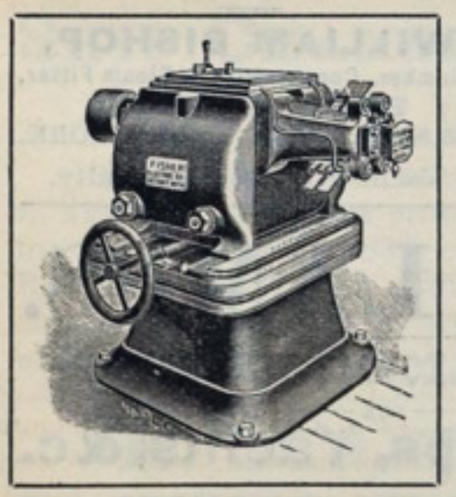

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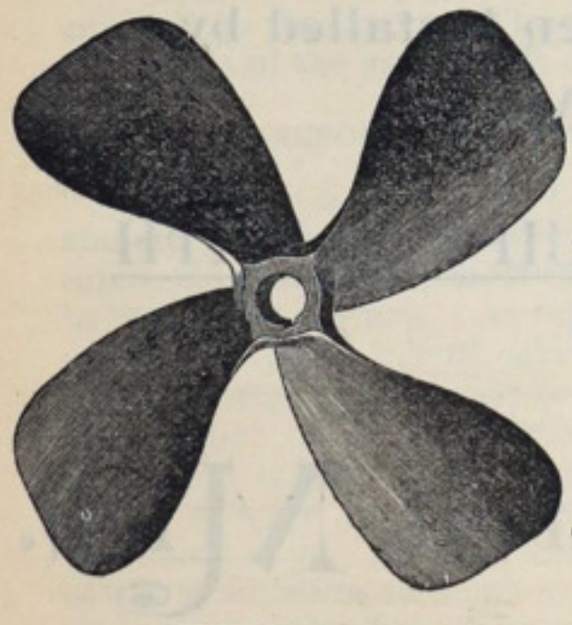

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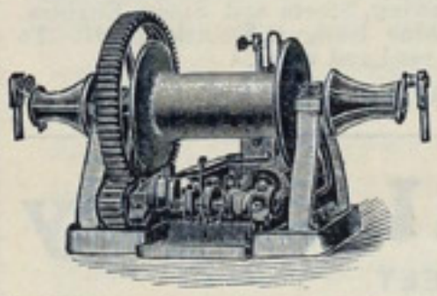

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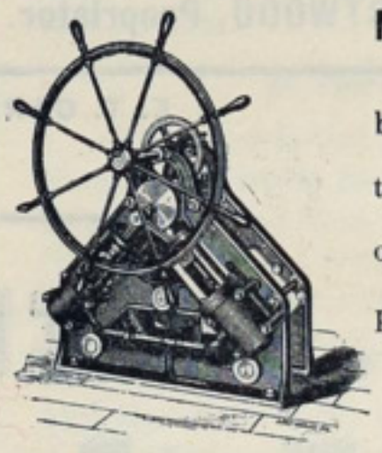

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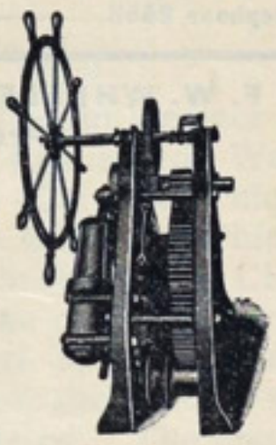

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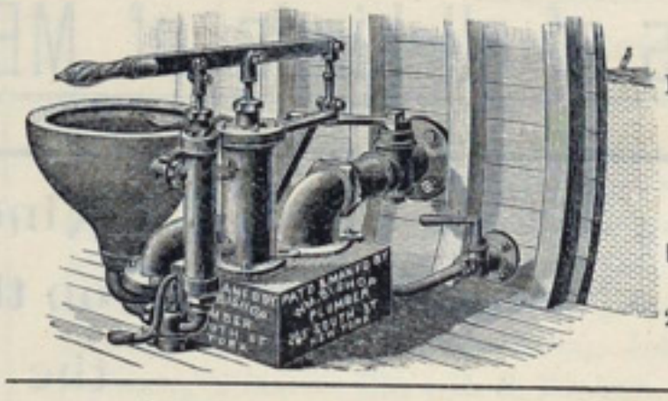

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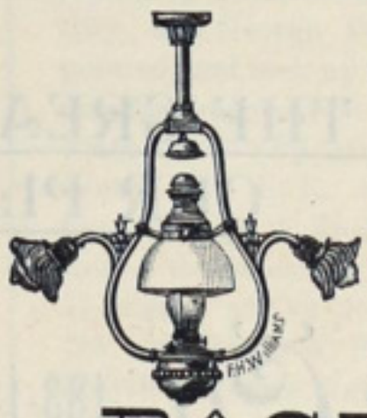

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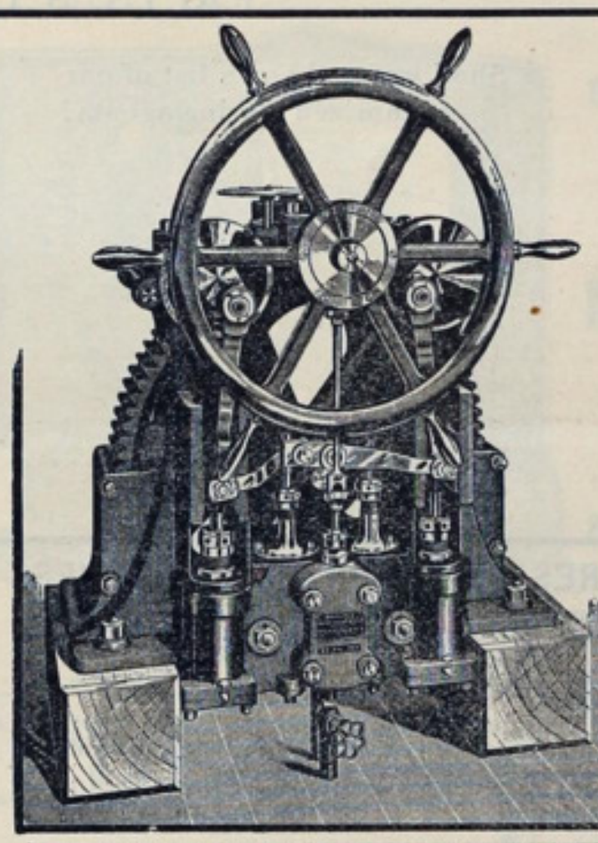

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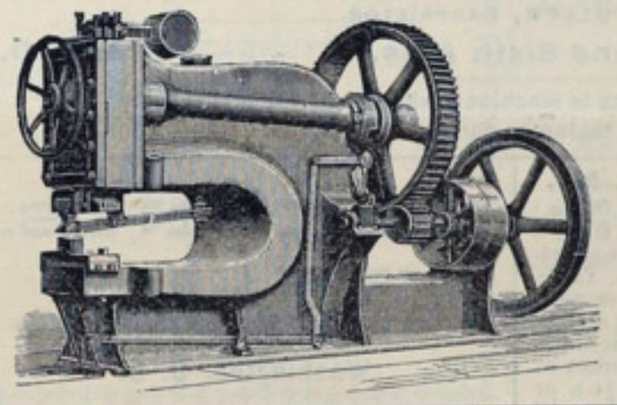

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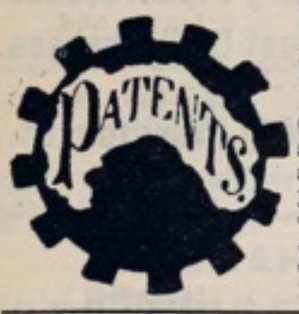

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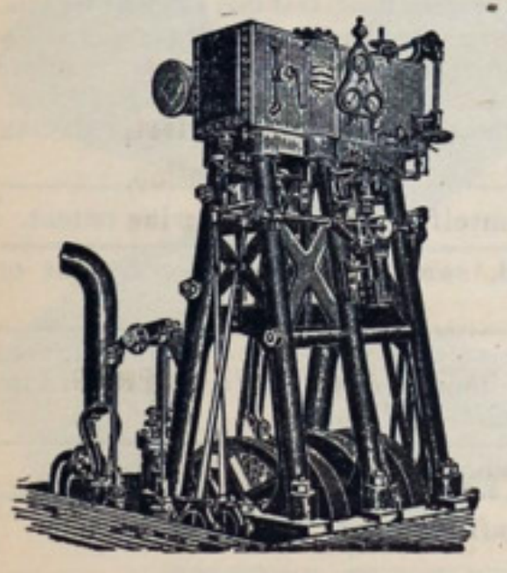

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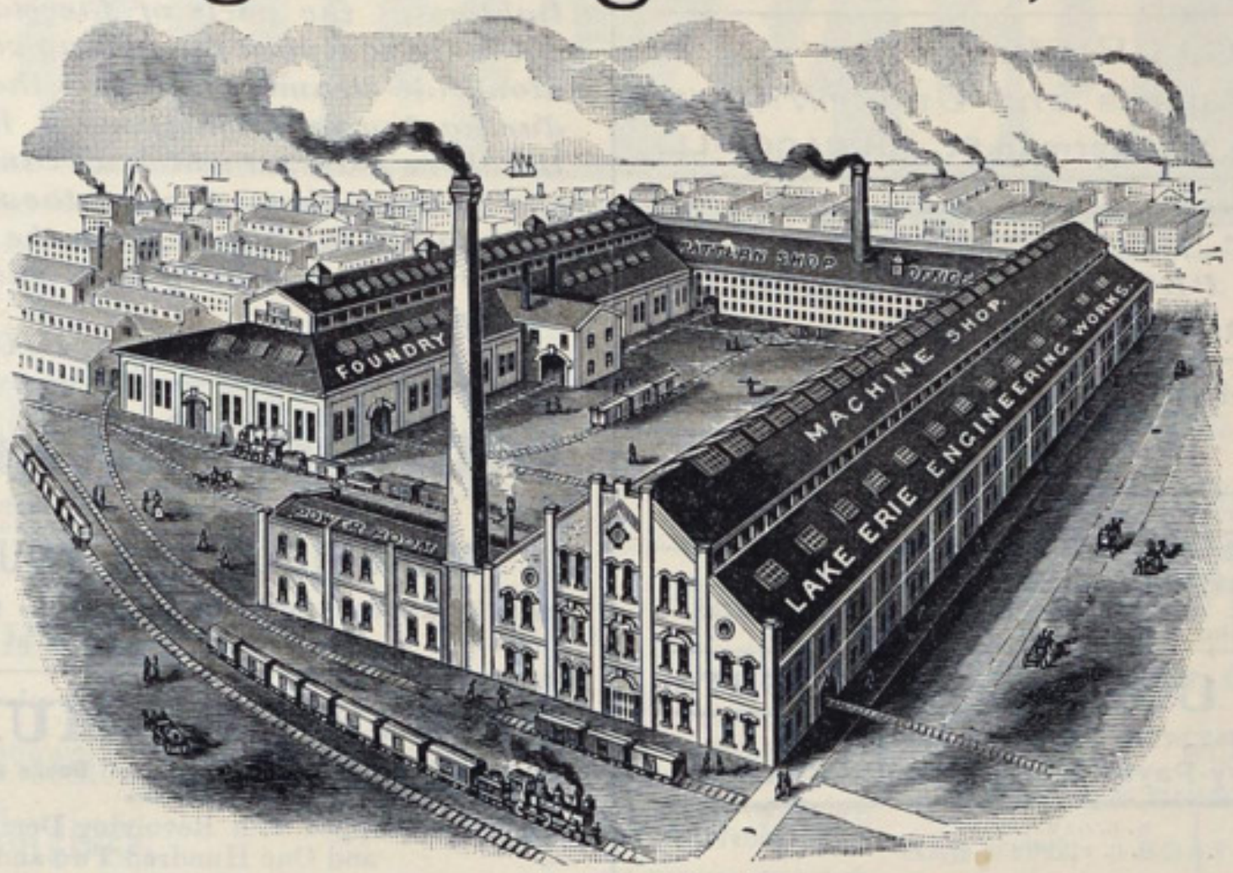

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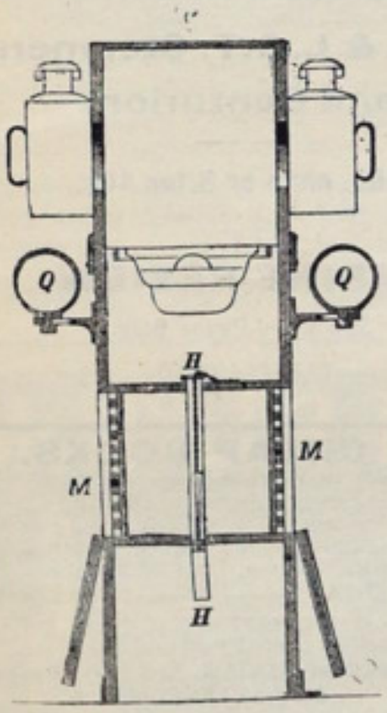

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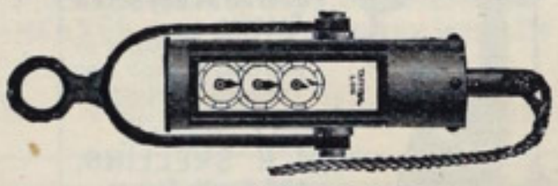

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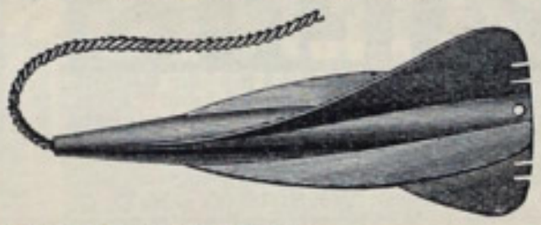

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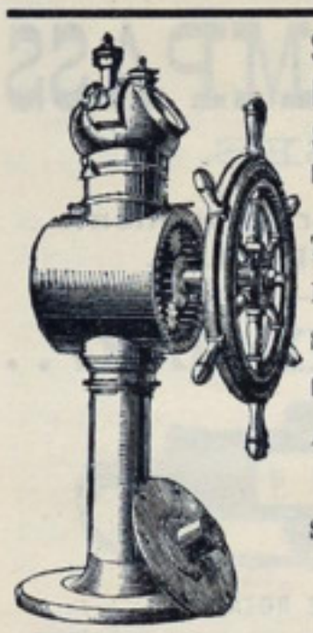

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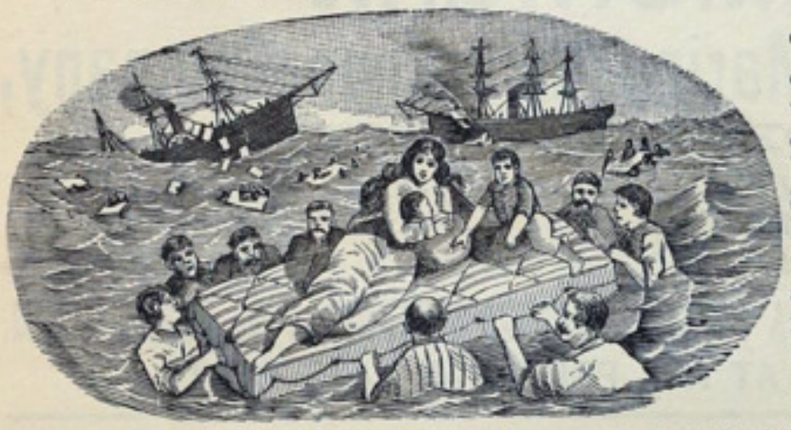

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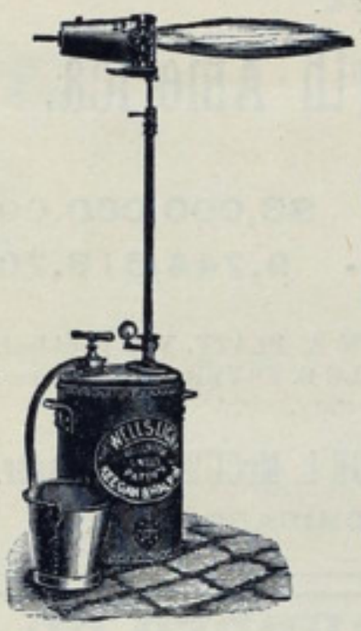

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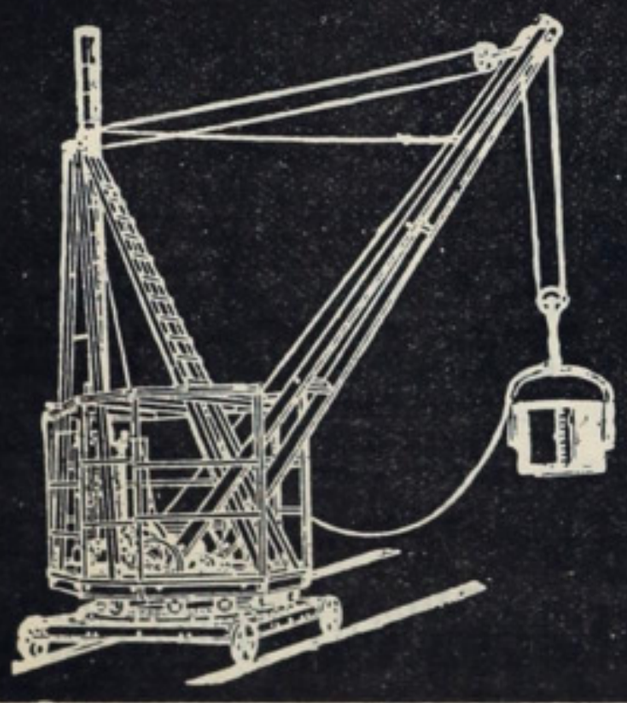

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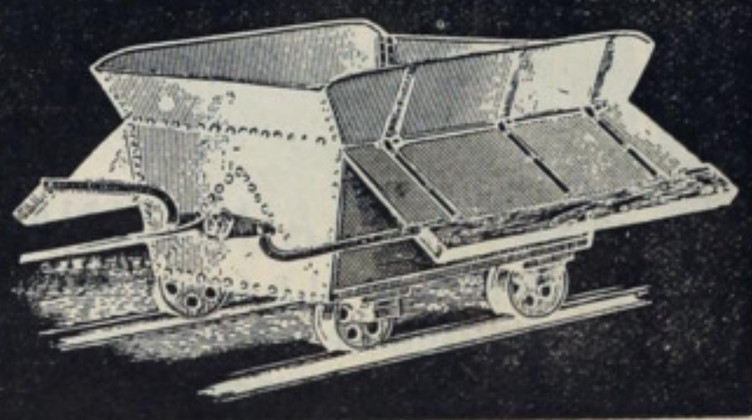

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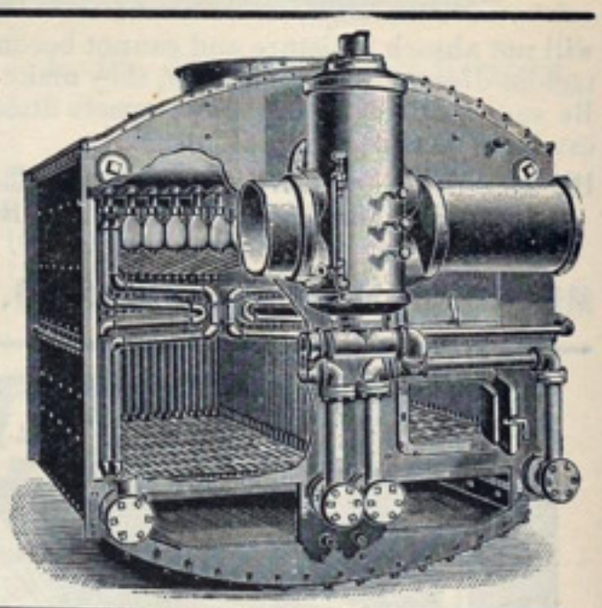

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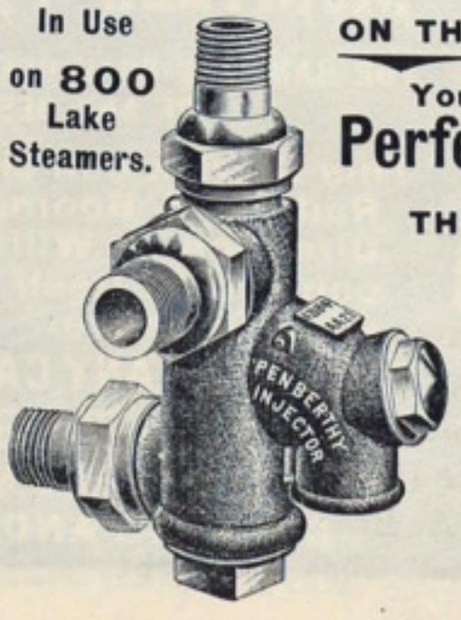

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